FLIGHT

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DEVOTED TO THE INTERESTS, PRACTICE AND PROGRESS OF AVIATION

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Victory!

WE have won. Bravo Scott! Bravo Campbell Black! Bravo De Havillands! Bravo Ratier! Bravo all others who helped in the magnificent achievement!

This has been the greatest long race in the whole history of flying. It means so much that for the moment the brain almost reels in thinking out all that it does mean. Our first thought must be that British design has once again been vindicated. When Great Britain made the effort, she won the F.A.I. world's records for speed, height, and distance. Those records have been taken from us by foreign nations, and we have made no attempt to recover them. To that extent British prestige sank in the eyes of the aeronautical world. It is no use talking about what we could do if we tried. It is achievement and only achievement which counts, and those three records are held by foreigners. Now, in a new sphere of aeronautics, in conditions never before laid down, British design has won a victory which places it upon the summit in the eyes of the world.

We wonder if Sir MacPherson Robertson really comprehended all that he was doing when he offered his prizes for an air race from the Mother Country to his own Australia, and threw the contest open to the whole world. Probably he did in the main, though he may not have foreseen all the results. We may not foresee them all yet. This race is going to have tremendous consequences. It set a definite problem, and it gave all nations a chance of seeing how others set about solving that problem and comparing notes. It forced everyone to think about the varying merits of speed, and range, and pay load; and from consideration of these points many results are likely to come about. Some competitors, it is true, apparently hoped to win by fitting as many extra fuel tanks as possible into a fast machine. The rules very wisely defeated such ambitions in the interests of safety. From such attempts to solve the problem of the race no useful lessons can be drawn. Three types, it may be said, were entered with definite objects and policies—the "Comets," the "Douglas," and the "Boeing"—and each of them has made good and practically proved what their entrants set out to prove. The "Comet" was designed specifically to fulfil the conditions of the race, and it has fulfilled them completely. The other two set out to prove that the new types of fast commercial aeroplanes which have been developed in America (both the "Douglas" and the "Boeing" are American designs), Holland, and elsewhere, could make a brave show even in such a race as this. They, too, have proved their point.

Some of the Lessons

SPEED is expensive and has to be paid for. One great question of the moment is what is a fair price and what is an excessive price to pay for speed. When the aeroplane has no serious competition from the ground or the sea, it is reasonable to fly at the speed which gives the best results for the most moderate expenditure. When, as in the Outback of Australia, the only rival of the aeroplane is an occasional coasting steamer or perhaps a camel train, a speed well below 100 m.p.h. is quite worth while. Once aeroplane meets aeroplane over the same route, speed must be forced up by the competition. Once the public in any country gets a taste for speed, it will not be content with anything except the best possible. This race has made it certain that for the future Australia and Great Britain must be brought as close together in time as the best aeroplanes can bring them. Mails can be got to Darwin in a trifle over two days. Passengers can be taken there in reasonable comfort in under four days. The "Comet" has proved the point for the mails; the "Douglas" for the passengers. Henceforth a journey of over a fortnight cannot be regarded with complacency.

Two features, among many others, have contributed notably to the splendid results of this race—the retractable undercarriage and the controllable pitch propeller.

Unless these two are coupled to a really "clean" aerodynamic design, they do not give full value for their weight and cost. In the De Havilland "Comet," as well as in the "Douglas D.C.2" and "Boeing Transport," we have aeroplanes in which drag-producing excrescences have been eliminated completely. Moreover, every possible care has been taken to see that drag due to "interference," the upsetting of the airflow where two surfaces meet, has been reduced to a minimum. All three are low-wing cantilever monoplanes.

Until the full details of the race become known, it is not possible to estimate accurately the degree to which complete success has been approached. As far as can be ascertained, the controllable pitch airscrews on the "Comet," "Douglas," and "Boeing," have given no trouble. Those on the American machines have been in use in America for a long period, but the Ratiers (we gratefully acknowledge our debt to France) fitted on the three "Comets" have not had the same extensive testing on British aircraft. During one of the practice landings at Mildenhall it became obvious that conditions may arise when it is very desirable to be able to change quickly from coarse to fine pitch. But no actual trouble appears to have arisen during the race.

Results with retractable undercarriages have not been altogether satisfactory. It would seem that there is still room for improvement in the method of indicating to the pilot whether or not his undercarriage is completely retracted or completely extended. But that is a matter for detail development, and the retractable undercarriage can be said to have established its claim.

The Men Behind the Machines

IT is with the deepest regret that we have to record the deaths of F/O's H. D. Gilman and J. K. C. Baines, the New Zealand entrants of one of the Fairey "Foxes." Every man and woman in the race knew that risks would have to be run, in spite of all that the rules could do to minimise them, and everyone cheerfully faced those risks. Naturally, the danger was magnified when a machine with only one engine flew over mountains or open sea, and this "Fox" crashed in the Appenine Mountains. If the "Comet" had not been able to fly on one engine, perhaps there would have been another tragedy in the Timor Sea. We offer our sympathy to the relatives of those two gallant officers.

For the rest, only pilots of great skill, great judgment, great experience, and great endurance could expect to get through to Australia with any chance of a prize in either race. The company which set off from Mildenhall was a galaxy of such pilots. In giving the fullest admiration to the winners, Scott and Campbell Black, we do not in any way depreciate the pilots who followed behind them or were obliged to stop on the way. Cathcart Jones and Waller, and the Mollisons, too, might have been racing neck and neck with Scott and Campbell Black at the finish if they had not had mechanical troubles. Parmentier and Moll in the "Douglas," Roscoe Turner and Clyde Pangborn in the "Boeing," all did magnificently, but the race actually was between the ideas and execution of the designers.

Fox Photos copyright

ROYAL INTEREST IN FLYING: Their Majesties the King and Queen paid a visit to Mildenhall on the eve of the Australia Race. In the background is Mr. and Mrs. Mollison's "Comet."

MAKERS of HISTORY

C. W. A. Scott and T. Campbell Black—Winners of the World's Greatest Race

IF Jules Verne, who at the end of last century wrote "Round the World in Eighty Days," could have foreseen such an achievement as this . . . a journey half-way round the world in *under three days!* Yet this is the magnificent achievement of Charles William Anderson Scott and Thomas Campbell Black and the aeroplane entered for them in the England–Australia Race by Mr. A. O. Edwards—the De Havilland "Comet" with two Gipsy Six engines.

By their achievement in winning the Speed Race they secure Sir MacPherson Robertson's Trophy and cash prize of £10,000 (£7,500 in Australian currency).

Scott, who has a wife and little daughter, is only thirty years old, but three times before the Race he had beaten the record between England and Australia—twice in 1931 and once during the following year. He was educated at Westminster School and joined the R.A.F. in 1922. At one time he served with No. 32 (F.) Squadron and acquired a reputation as an aerobatic pilot. As a commercial pilot in Australia he frequently made long air taxi flights, perhaps the best known being a 4,000-mile trip across Central Australia.

Campbell Black served during the War in the R.N.A.S. and the R.A.F. During his career as a pilot in Africa he flew H.R.H. the Prince of Wales, who was on a big game hunt. He has flown between London and Nairobi thirteen times, and in 1932 reached the latter town from Croydon—a distance of 5,000 miles—in eight days. In 1931 he rescued Herr Ernst Udet, the German pilot, who was stranded on an island in the Upper Nile. Black is now personal pilot to Viscount Furness.

A description of the winning D.H. "Comet" will be found elsewhere in this issue.

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ZERO HOUR: The crowd watches the competitors line up. In the foreground is the unlucky Mollisons' "Comet," and behind it Col. Roscoe Turner's Boeing.
(Below). TOEING THE LINE: Another view over the heads of the crowd. The nearest machine is the "Puss Moth" flown by Mr. C. J. Melrose, next to it are the Airspeed "Courier" A.S.5. (Sqd. Ldr. Stodart and Mr. K. G. Stodart), and Flt. Lt. Shaw's British Klemm "Eagle." These machines were in the Handicap Race.

NEVER, in the whole history of aviation, has there been such a vitally impressive hour as that preceding the bewitched moment on October 20, 1934, when the familiar little Union Jack was dropped for the first machine off in the England-Australia race. Many great flights have begun at dawn, and thousands—nay, millions—of people have waited for the first light, their mouths dry with excitement.

Imaginations had been fired. The roads for miles around the little village of Mildenhall were choked with motorists, cyclists, and walkers who had struggled out of bed at four o'clock or who had never been to bed at all. Cars were driven recklessly into ditches while the occupants prepared to walk across ploughland to the bright hangar lights which could be seen in the distance. Yet, to be entirely matter-of-fact, there was little or nothing to be seen but a score of heavily loaded aeroplanes droning out of the aerodrome and turning gingerly towards the dawn on the first leg of a long trip.

The scenes and sounds on the tarmac an hour before the start were entirely unforgettable. Hundreds and hundreds of people walked or ran in the dim light.

Beside the floodlit south hangar the big Boeing Transport gleamed dully, while mechanics crawled, climbed and were given orders. One of the metal airscrews moved fractionally, stopped, moved again, and suddenly became a glistening disc while foot-long jets of orange flame played from the exhausts and the hangar reverberated.

Yet above the clamour could be heard the monotone from one loud speaker and the faint echo from another on the apron. "Clouds at three thousand feet; visibility two miles; wind two sixty-two degrees, twenty-eight miles an hour . . ." and so on, with weather reports from all the principal aerodromes on the first section of the course.

In the hangar itself the Douglas D.C.2 was slowly being moved, and the *Panderjager* was already on the tarmac.

Presently, against a background of a dawn fit for the occasion—layer upon layer of jagged orange clouds climbing into starlit purple—the Douglas and the Pander were being taxied along the front of the aerodrome enclosure. A flutter of handkerchiefs from the cabin windows and an answering wave from the crowd.

Probably more effective

the Australia Race

How C. W. A. Scott and T. Campbell Black Scored their Magnificent Victory with the De Havilland "Comet": A Flight Half-way Round the World in Less Than Three Days: Game Pursuit by Parmentier and Moll's Douglas and Turner and Pangborn's Boeing Transport: Steady Progress by the Handicap Race Competitors

than anything for the average sightseer was the realisation that the Royal Dutch Air Lines were taking fare-paying passengers and mails in their new 200-m.p.h. Douglas. This was business, not racing, and they were seeing the last word in high-speed transport machines—the result of many years of steady research and development.

Judging from the weather reports, things were not too good over Europe, and the few pilots taking the Great Circle course directly to Baghdad or to Bucharest were likely to have rather less trouble than those flying to Marseilles or to Rome. But the whole matter lay in the lap of the gods, and it was inevitable that those without wireless would need to take risks over the European section.

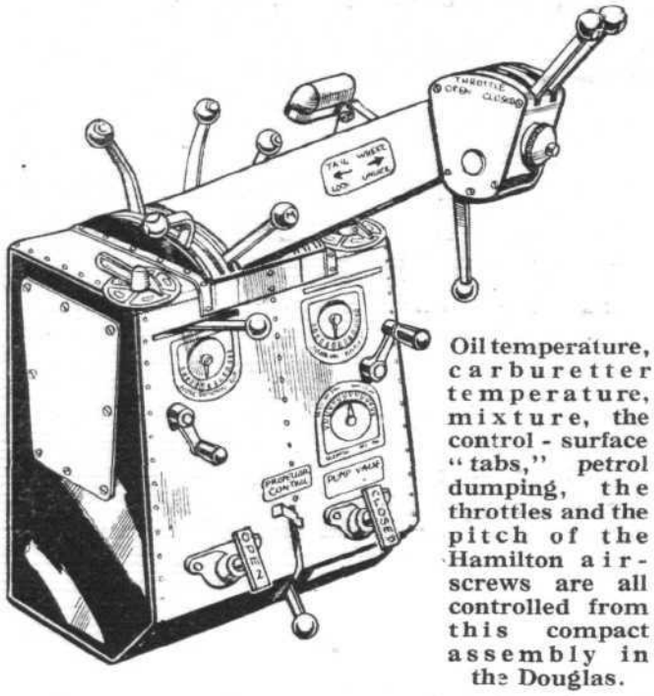
Sir Alfred Bower, Acting Lord Mayor of London, was to start the first machine; he had been asked by the Lord Mayor of Melbourne. The crowd waited, saw that the Gee Bee, green and fearsome, was on the line, saw, too, with dismay that the Bellanca was not, and wondered why the big Boeing had not yet taxied up to the line of machines on the aerodrome boundary. They were to start at 45-second intervals.

Meanwhile, thirteen picked Press photographers had been taken in an R.A.F. "float" (not a Black Maria), carefully guarded by four marshals, to the starting line; and almost immediately after they had been allowed to disembark, in the words of one of the more cynical of the photographers, "thirteen *thousand* spectators raided the line-up." Panic. The just and the unjust were smitten by incredulous and unnerved officials, an S.O.S. for mobile police was broadcast, and a fire engine used to force back the surprisingly meek "rioters." At the other end, special correspondents prepared to see what they could of the start from behind serried ranks of ordinary spectators. In other words, no arrangements whatever were made for those who were expected to tell the rest of the world what had happened.

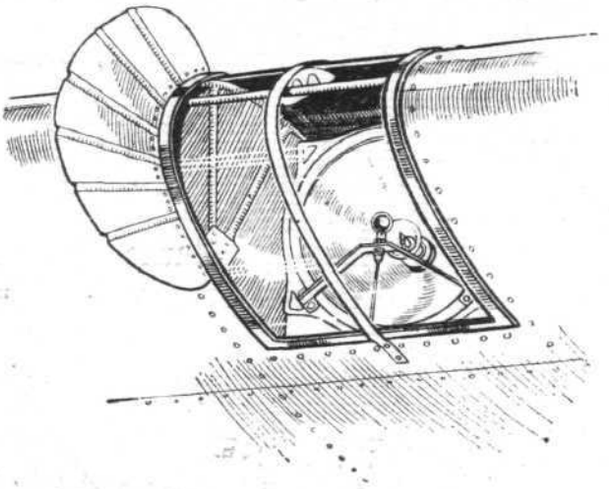
Ten seconds to go. The first starter, Mollison, was opening the throttles of his "Comet." "He's off!" For a moment the machine remained on the line, while the airscrews became a disc of light and, from the antics of one Broad, it was surmised that the wheel-brakes were still partially on. Then the machine slowly moved away and gathered speed, tail down; there were 260 gallons of fuel on board. At last, with a final bounce, *Black Magic* became airborne and climbed away with the high-pitched sing-song drone peculiar to the "Comet." Incidentally, the "Comet" pilots were definitely holding their machines down for the take-off, so long runs were inevitable.

The big Boeing, which had taken its place almost at the last minute, was away on its tail, appearing slow by comparison.

When "Comet" Number 19 moved away (with a copy of *Flight* for Australia!) it seemed almost that Cathcart-Jones must have had a spell placed on him. After running less than two hundred yards, the watchers at the hangars saw the machine swing suddenly towards them, and simultaneously there appeared a jet of white flame from the port engine as the pilot cut the throttles.



Oil temperature, carburetter temperature, mixture, the control-surface "tabs," petrol dumping, the throttles and the pitch of the Hamilton air-screws are all controlled from this compact assembly in the Douglas.



(Above) The installation of one of the landing lights in the Boeing 247-D, showing the neat method of screening.

(Below) A case of maps and charts, complete with pencils, protractors and compasses in the *Panderjager*.

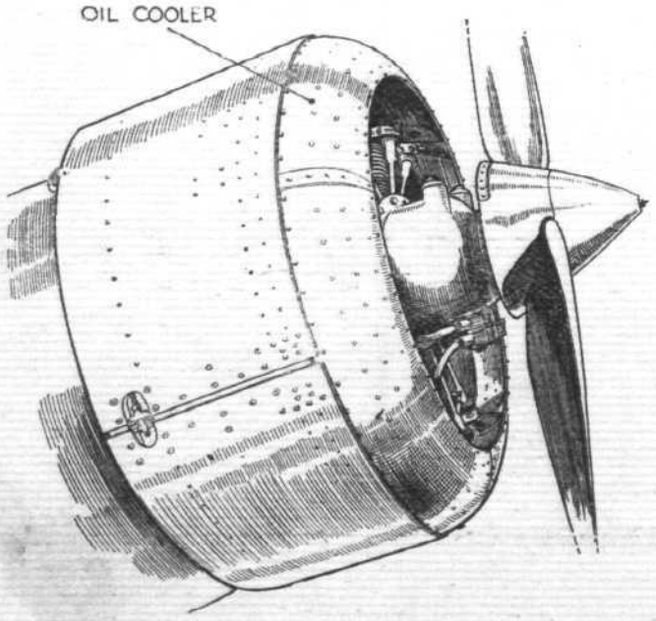
Evidently one engine had failed to pick up, but everybody wondered whether things were quite right after the late mishap and the repairs. But Cathcart Jones taxied back and opened out again after losing nearly two minutes.

After the Pander S.4 had gone, the crowd wondered again, for Stack's "Viceroy" turned back after taxying a few yards. He had made a start according to the rules and was returning to pick up films of the start, delaying some thirteen minutes. Not much in 11,000 odd miles, but, perhaps, enough to make a difference in the final placings.

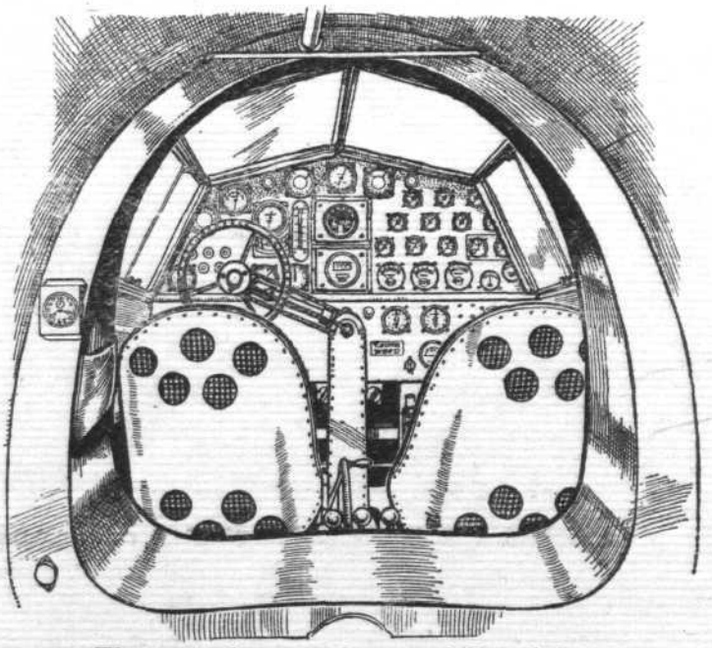
The big Douglas was tucking its wheels up before it had flown over the boundary of the aerodrome.

Then came that mystery machine—the Granville monoplane. Nobody was quite sure whether Wesley Smith and Miss Cochran were trying for Baghdad non-stop, but as the machine bounced and bounced again with the big engine making the most satisfactory bellow, it was obvious that it was heavily loaded. However, all was well.

The Fairey III F went away, but where was Baines' "Fox"? Evidently the engine could not be started. Woods' "Vega," comparatively lightly loaded, turned on to its course right off the ground in a steep climb, and was obviously fast. Brook's Miles "Falcon,"



In the Airspeed "Viceroy," or A.S.8, manned by Stack and Turner, the oil coolers for the Siddeley "Cheetah" VI engines form the leading edge of the cowlings.



There are between forty and fifty dials on the *Panderjagers'* instrument panel.

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SPOTTING A WINNER!: Mr. Bellamy, the Hon. A. Hore-Ruthven, Lord Glanely, Lady Furness and Lord Furness chat with Scott and Campbell-Black, crew of the "Comet" *Grosvenor House*, who scored such a notable victory. (*Flight* Photo.)

too, went up like a lift and just as if it had no passenger and no special tank, and Capt. McGregor's "Hawk Major" went off in a climbing turn. The Klemm "Eagle" had its wheels tucked up before it had left the boundary.

At last Baines' "Fox" was away after a series of fearsome bounces, and Stack took on his films. Twenty fully loaded machines had taken off safely.

The race was on, and the world waited for the first news.

It was bad news. A machine of which great things were expected, Stack's Airspeed "Viceroy," was reported down at Abbeville, and the trouble which had caused Parer and Hemsworth so much worry at Mildenhall, a persistently leaking radiator, caused them to put down the Fairey "Fox" near Boulogne, also. Stack and Turner pushed on to Le Bourget at 3.22 p.m., but it seemed that Parer could not hope to get away before dawn on Sunday.

Slowly—painfully slowly for a race for which the fastest machines were cruising around the 200 m.p.h. mark—more news trickled through. Fog plus installation troubles appear to have delayed Stack. H. L. Brook's "Falcon" was down at Plessès, near Paris, owing to bad weather; F/O. C. G. Davies had landed somewhere south of Paris for fuel; and Hewitt's "Dragon Six" somewhere near Boulogne.

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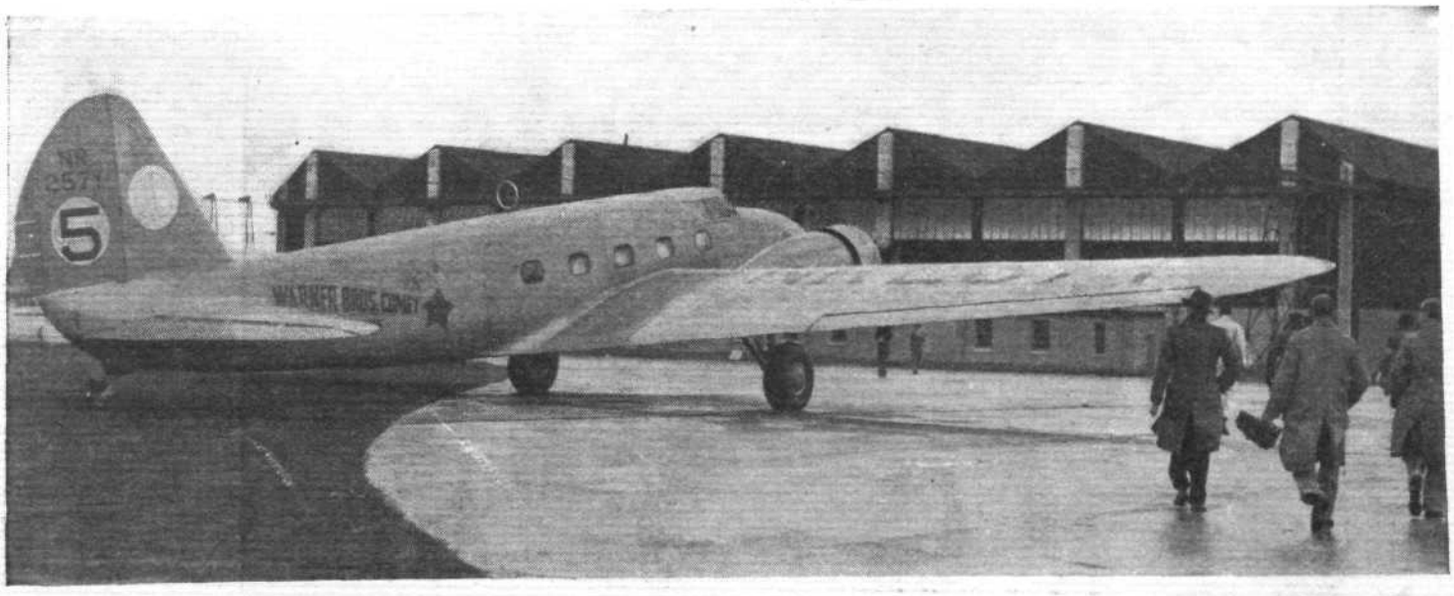

THIRD TO ARRIVE IN AUSTRALIA: The Boeing 247-D (2-SIH1-G "Wasp"), taxying in at Mildenhall after flying over from Martlesham Heath, where it had been weighed. (*Flight* Photo.)

The big Douglas came into Baghdad airport at 11.10 p.m. (G.M.T.), and the *Panderjager* just three-quarters of an hour afterwards. Parmentier and Moll had travelled to such good effect that, in spite of three stops, they had averaged something like 170 m.p.h. over the longer course. They left at midnight.

The Boeing arrived at 2 p.m., and left for Karachi in half an hour after the shortest of refuelling stops. Col. Roscoe Turner appeared to have had some difficulty during the last section, and failed to get Baghdad on his transmitter. Incidentally, there was absolutely no trace of oil on his engine cowlings after nearly three thousand miles of flying.

At last the third "Comet" arrived soon after dawn; the waiting crowd had been more than anxious about Cathcart Jones and Waller, knowing that their fuel supply must have been exhausted. They had overshot Baghdad, and, landing about a hundred and twenty miles beyond, had awaited daylight, and finally landed with a bare two gallons in the tanks. Flying for long periods at 17,000 feet and often by instruments alone, the ground had been seen only an hour before reaching the Black Sea.

They left at 5.57, only to return after a few minutes with no oil pressure showing for the starboard engine. Apparently, the lubrication trouble caused a partial seizure, for a cylinder and piston in that engine were changed, and No. 19 did not leave until 12.14 p.m. (G.M.T.). The weather was then overcast, and looked as if it might be difficult for the remaining competitors.

That morning Woods and Bennett had "cracked up" while landing at Aleppo, the "Vega" going over on to its back. Possibly the trouble at Heston before the start and at Athens later on had precipitated the trouble, but in any case they were out of the race. A pity, after the very excellent time they had made. Stack and Turner had withdrawn from the actual race after several delays, and were following on in due course. Shaw's "Eagle" had reached Rome at 2 p.m., shortly after Gilman and Baines, on the ill-fated "Fox." The "Dragon Six" and Melrose's "Puss Moth" were now on their way to Aleppo, which had already been reached by Hansen's Desoutter.

But all the excellent shows put up by the pilots of slower machines were completely eclipsed by those of the leaders who were already a quarter of the way round the world.

Scott and Black had made the 2,300-mile flight from Baghdad to Allahabad at an average of something like 190 m.p.h., in spite of a long detour. They had left for Singapore in a straight line over the Bay of Bengal in bad weather, had been sighted at Alor Star, and had reached their objective at 10.23 p.m. (G.M.T.), leaving again after a stop of little more than an hour. It was altogether too miraculous for comment. The "Comet" had flown 7,040 miles in forty hours with two control stops and one emergency stop, and were now comfortably ahead.

The Mollisons had lost their lead after making a "record" to India, arriving at Karachi at 5.45 on Sunday morning. They left an hour later, but returned almost immediately with an undercarriage which would not retract—apparently a heavy landing had damaged it. Apart from the added resistance, the "Comet's" engines overheat if the wheels cannot be drawn up, at least partially. The trouble was temporarily rectified, but fog then delayed their departure until 9.5 p.m. (G.M.T.).

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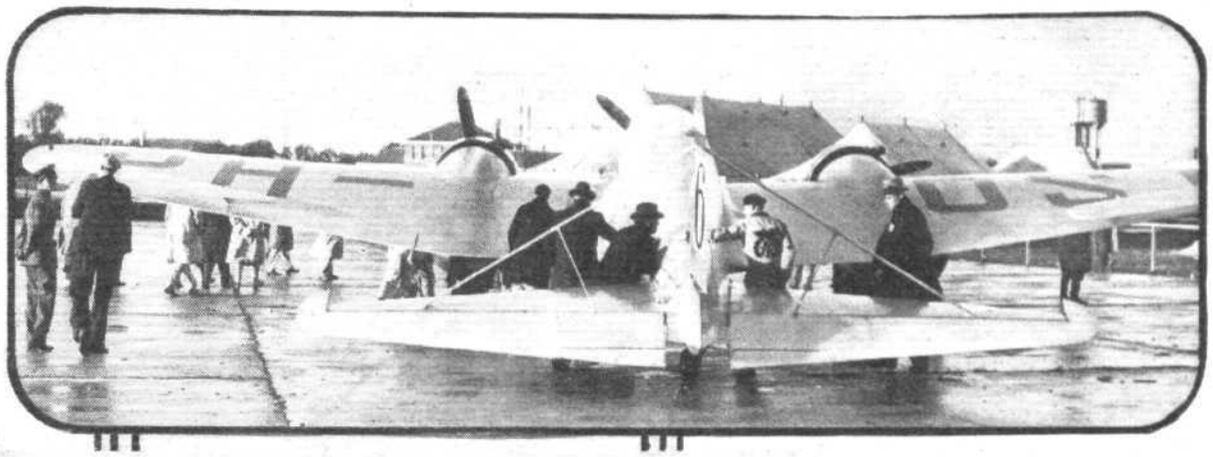

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(Above) GRACEFUL — BUT UNLUCKY: A rear view of Asjes's and Geysendorfer's *Panderjager* (three Wright "Whirlwinds"); an undercarriage failure at Allahabad put them out of the race.

(Centre) A NETHERLANDS PAIR: The big Douglas D.C.2 (two Wright "Cyclone" Fs) flown — with three fare-paying passengers—by K. D. Parmentier and J. J. Moll, and, behind it the *Panderjager*.
(*Flight* Photographs.)

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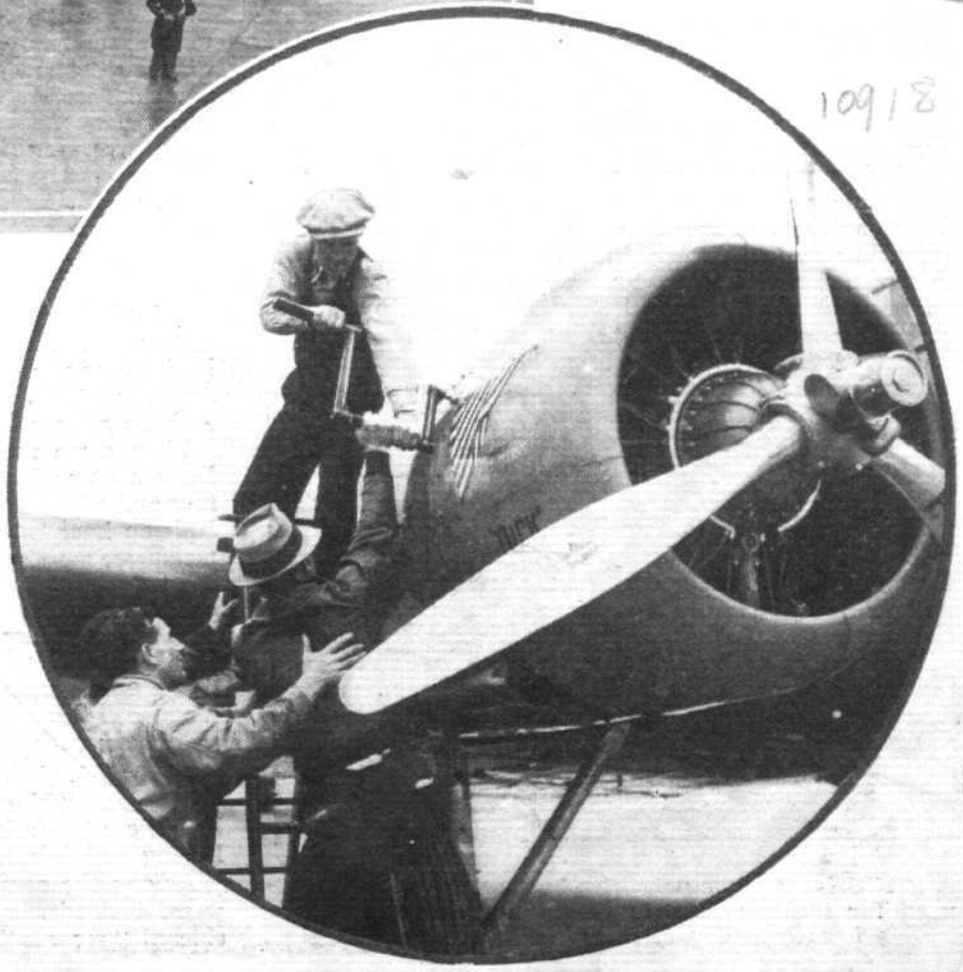
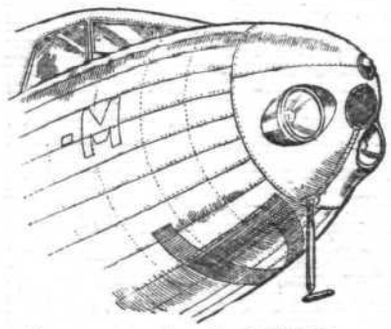
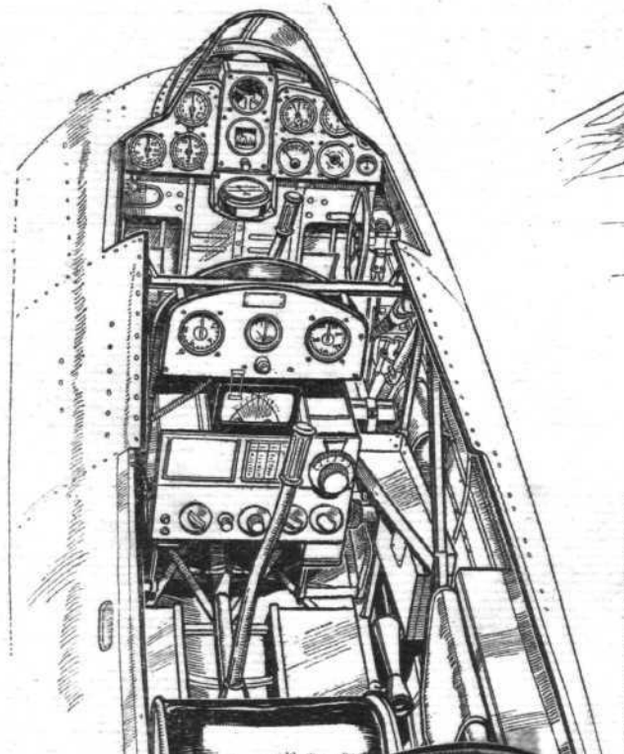


(Left) ON MACROBERTSON EVE: An impressive scene on the apron at Mildenhall. On the right stands Jones's and Waller's "Comet," with its undercarriage undergoing last-minute repairs; *Baby Ruth* is at the compass base; in the centre is the Mollisons' "Comet"; behind it are Hewett's and Kay's "Dragon Six" and a D.H. service "Dragon"; and in the background the "Gee-Bee" is being run up, while the ill-fated Fairey Fox can be discerned.

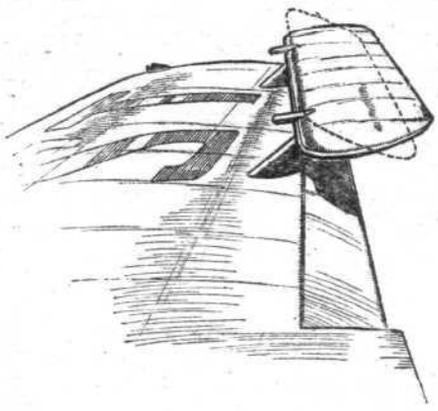
(Right) "LET ME HELP!" Competition to give a helping hand with the crank of the inertia starter on the Boeing.



Air vent, landing lights and pitot head on the Douglas O.C.2.



The cockpits of the *Irish Swoop* (which was withdrawn at the last moment) with the transparent roof removed. The D./F. equipment is of U.S. Navy pattern.



Unusual aileron arrangement on the *Panderjager*.

In the meantime the Douglas D.C.2 had made landings at Jask, Karachi, and had reached Allahabad at 2.11 p.m., leaving again in exactly an hour. So they were more than a thousand miles behind the leaders. Anything might happen, and the Dutchman was running to schedule just as K.L.M. had planned—like any good transport service. It had even returned to Allahabad to pick up a straying passenger!

The Pander S.4 had left Karachi, and were flying third in the speed race. But luck was against them. Either one or both of the "retractiles" failed to come down properly, and the big machine touched on one wing tip and a propeller blade. So Asjes and Geysendorffer were out of the race after being less than two hours behind the Douglas.

Col. Roscoe Turner's Boeing was running third, at least for the time being. He had left Karachi and reached Allahabad at 10.5 p.m. after a worrying journey. With his fuel supply running short, Turner had been well off his course and had only reached the aerodrome at the last minute. Allahabad had received several messages, but evidently Turner had then heard no reply, otherwise he would have brought his own D./F. equipment into action and "led himself in." However, Allahabad eventually guided them in. The Boeing was soon on its way after the leaders.

At 9.30 a.m. (G.M.T.) the leading "Comet" was sighted over Timor Island—a little more than five hundred miles from Darwin. It appeared as if, with eight hours' lead, Scott was almost a certain winner, but, as Mr. Bruce remarked at the pilot's banquet, "when a competitor reaches Australia he has only just begun the race!" Parmentier and Moll left Singapore at 7.30 a.m. and stated that they were going "all out" after Scott. As the Douglas cruises at 180 odd on sixty per cent. of the throttle opening, this might be taken to mean nothing or everything. They reached Batavia, the last of their "known" route, at 10.30 a.m. (G.M.T.), and Roscoe Turner was reported as having passed Rangoon on his way to Singapore. The second "Comet" arrived at Allahabad at 8.40 a.m. (G.M.T.).

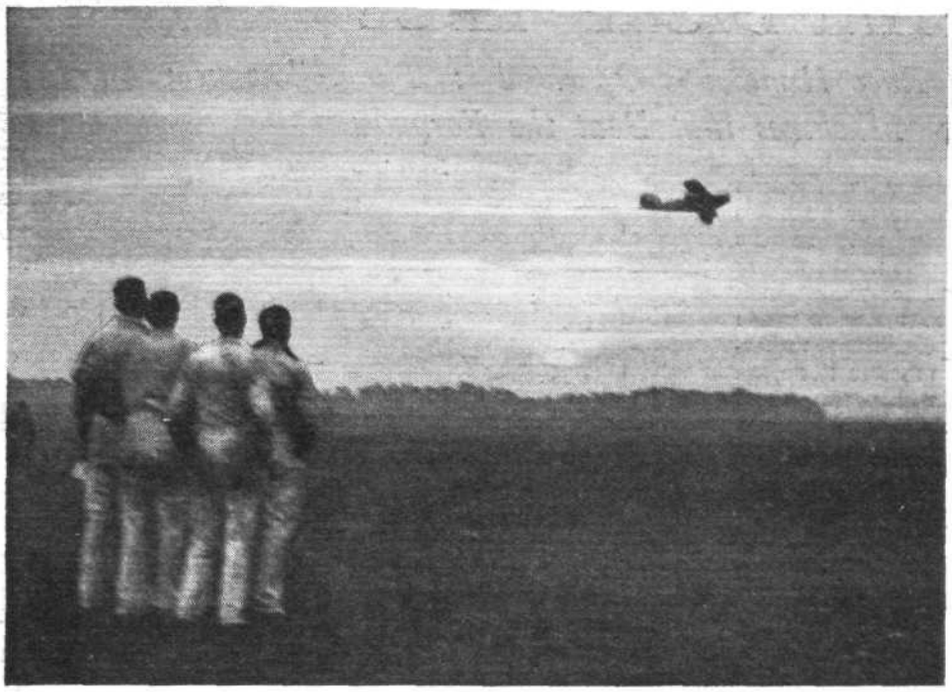
It seemed that the unlucky Mollisons were definitely out of the race, though there was still hope of a place—anything might yet happen to the leaders. The changing wind on the route between Karachi and Allahabad had worried them as well as the crew of the Boeing, and they had landed at Jubbulpore after flying part of the way on one engine. The oil trouble that was to cause such anxiety in the later stages of Scott's winning flight had begun. At Allahabad it was discovered that two pistons were cracked and the cylinders scored.

Then came the magnificent news. Scott had reached Darwin at 11.8 a.m. (G.M.T.) after flying for two days four and a half hours. The record had been "quartered"! Half an hour later, when fuller details came through, the facts were more than disquieting. For two and a half hours the "Comet" had been flown over the Timor Sea on one engine; the other had seized up. Would it be possible to do anything about it, and could Scott get off on one engine with a lighter load? It was known that the "Comet" could fly comfortably on one motor.

Within two and a half hours, the engine had been at least partially freed and the "Comet" was bound for the next control. But how much could the Douglas gain while Scott was nursing his damaged engine? Parmentier and Moll were flying between Batavia and Rambang, and the Boeing had left Alor Star.

Among the comparatively slow people—many of whom were, incidentally, making flights which would be considered "records" in normal times—the amazing "Hawk

A BRUSH-UP: The primitive but satisfactory means used for making Mildenhall an aerodrome fit for heroes to depart from. (*Flight* Photo.)



DAWN OF ADVENTURE: A striking impression captured by the camera as the sun broke through at Mildenhall. The machine is F/O. Davies's and Lt. Com. Hills' Fairey III F.

Major" had reached and left Karachi, the "Dragon Six" had left Baghdad for Karachi, the Airspeed "Courier" had left Aleppo for Baghdad, and the Desoutter was on its way to Bushire. Parer was definitely out with the "Fox" after innumerable delays.

Finally and, it would seem, almost inevitably in such a race, tragedy intervened. The Fairey "Fox" Number 62, after taking off from Rome for Athens, crashed in Apulia and the machine caught fire. F/O H. D. Gilman and Mr. J. K. C. Baines both lost their lives. Reports received up to the moment of going to press are so varied that it is difficult to discover whether the machine simply stalled or whether it actually caught fire in the air. Apparently, however, they were making for an emergency landing ground—a fact which automatically suggests trouble.

At 10.40 p.m. (G.M.T.) the leading "Comet" had reached Charleville after averaging 154 m.p.h. over the penultimate leg—flying on one engine for much of the distance. The Douglas was still a thousand miles behind and was being almost harried by the Boeing. Col. Roscoe Turner, with the Boeing, left Singapore eight hours after the K.L.M. cruiser and was making directly for Darwin. Cathcart Jones had left Allahabad for Singapore, McGregor was at Jodhpur, and Hewitt had left Baghdad.

The whole world waited for the news of Scott's arrival at Melbourne. He had left Charleville. Turner was reported at Koepang and Cathcart Jones at Singapore.

At last came the expected confirmation. C. W. A. Scott and T. Campbell Black brought the D.H. "Comet" Number 34 over Flemington Racecourse, Melbourne, for the two stipulated circuits at 5.30 a.m. (G.M.T.). Two days, twenty-three hours since they had left Mildenhall! They put down at Essenden and were carried back to Flemington in two "Gipsy Moths" for the reception.

More than three hours later, the Douglas D.C.2, complete with passengers, mail and larder, cruised into and out of Charleville, and no one doubted that, in the ordinary course of routine, Parmentier and Moll would be at Melbourne some seven hours or so after the "Comet."

At the eleventh hour, as far as the K.L.M. entry was concerned, a message was received to say that the Douglas had been safely forced landed at midnight on Albury racecourse at 3.17 p.m. (G.M.T.). Parmentier had been off his course since leaving Charleville, and had asked for his position several times while circling in the Wodonga district. And the Boeing was on its way to Charleville!

On the racecourse at Albury the Dutch pilots decided to wait for the daylight before flying on to Melbourne. With the Boeing still thirteen hundred miles away, the Douglas appeared to be safely enough in second place. But could it take off comfortably from a relatively confined space? It would be tragedy indeed if the big machine had to be dismantled when less than an hour's flying from the finishing line. Parmentier and Moll would certainly take no risks if there was any doubt about the ability of the two engines to pull the machine out.

The bulk of the field, scattered amazingly over the face of the eastern hemisphere, were pushing along at their own separate paces. In the face of the winners' extraordinary performance their own efforts appeared puny, though several were on a schedule that would have spelt a "headline" record only a few years ago. Ross Smith took twenty-seven days over his flight to Darwin in 1919.

Cathcart Jones and Waller had arrived at Batavia, but were likely to be held up with trouble for several hours. They, too, had suffered a portion of the troubles that had caused *Black Magic* to be withdrawn at Allahabad and *Grosvenor House* to be flown for long hours on one engine. All the testing in the world cannot be a facsimile of the gruelling which is received in a race.

McGregor and Walker, though entered only for the handicap race on their standard Miles "Hawk Major," were running fifth on Tuesday evening and had left Calcutta for Rangoon at 7.12 a.m. (G.M.T.)—a completely amazing effort. Actually they had beaten any time put up by a similar machine on the first half of the route. Their all-in average was in the region of 84 m.p.h.

Hewett and Kay, with the "Dragon Six," were, comparatively speaking, close on their heels, having reached Allahabad at 12.10 p.m. Remembering their forced landing near Boulogne, they had done extraordinarily well.

And So To Bed!

The one and only Airspeed left in the race, the Stodarts' "Courier," had left Jask, and Hansen's Desoutter had reached Karachi. Considering the fact that the Desoutter's normal maximum speed can have been very little more than 120 m.p.h., Lt. Hansen's show was one of the best.

The Australia-England "record" breaker, C. J. Melrose, was living up to his statement that his race was to be a tour, but, nevertheless, he was reported as having left Jask at 9.27 a.m. (G.M.T.).

Jack Wright had left Baghdad, with Polando and the Lambert Monocoupé, after some trifling troubles along the route and a lot of worry over the weather in Europe. Shaw with the Klemm "Eagle," had made up a great deal of time since his forced landing in Spain, and was at Baghdad, but with a damaged undercarriage, and Brook with the "Falcon" had left Rome for Athens, where he also suffered damage. Davies' Fairey III F was down in Cyprus.

The De Havilland "Comet" had won, the victorious pilots were in bed enjoiyng a well-earned rest, but the race was still in progress. Other places were waiting to be filled, and the handicap race was an event of its own—and no man could forecast the result. All day and night anxious crowds awaited the second and third men, particularly as their positions in the Commonwealth were known, and there was general disappointment when it was learned that the Dutchmen, who were second, could not complete their remarkable run until Wednesday morning.

THE HANDICAP RACE

How the Australia Race Handicaps Operated : The Allowances given : Machines that Beat the Formula

NO one has yet succeeded in evolving a formula which is fair to all types of aeroplane for purposes of handicapping, and the formula used in the England-Australia race is no exception. Probably it is no better and no worse than other formulæ which have been tried, but it does appear to under-estimate the speed generally. So long as the percentage under-estimation is the same for all types, it matters little, as each machine will "beat" the formula by the same amount. In the table of handicap, speeds, etc., the column of speeds shows, of course, the speeds which the different types will do according to the formula. The fact that the Airspeed "Viceroy" is calculated to be faster than the De Havilland "Comets" is an indication that the formula does not and cannot take into account differences in design such as the relative size of fuselages, the degree of fairing and streamlining, and so forth.

Where the Formula Failed

The "Viceroy" is a heavier machine than the "Comets," but has more powerful engines. These features are brought into the handicap speed formula, as is also the quantity known as "wing power," i.e., the horse-power per square foot of wing area. But whereas the "Comets" have very slim fuselages, with diminutive cabin roofs, the "Viceroy" is an ordinary passenger cabin machine, with a pronounced break in the lines where the windscreen rises from the forward decking. In the circumstances one would expect the "Comets" to be quite a good deal faster than the "Viceroy," which is the case in actual fact, but the formula does not allow for such differences. All it attempts to do is to take into account the loaded weight, the pay load, the horse-power, and the wing area.

It is, perhaps, doubtful if any other machine in the race "beats" the formula by such a wide margin as that of the "Comets" (about 50 m.p.h.). But it is worth remembering, in this connection, that the "Comets" were specially designed for the race, and were, in fact, the only machines to have this distinction. To achieve a speed of more than 230 m.p.h. when carrying two people and enough fuel for a flight of 2,500 miles (with a fair margin for head winds) with engines totalling but 460 h.p. is a performance which no formula based upon average values could be expected to cope with.

In addition to the sixteen starters shown in the table there were four starters in the speed race only: No. 5, the Boeing monoplane (2 P. and W. Wasps) piloted b Roscoe Turner and C. Pangborn; No. 6, the Pande jager (3 Wright Whirlwind), piloted by Geysendorfer an Asjes; No. 46, the Granville Gee Bee (P. and W. Hornet piloted by Wesley Smith and Jacqueline Cochran; an No. 62, the Fairey "Fox" (Felix), piloted by Baines an Gilman. The Bellanca monoplane (No. 29) (P. and W Wasp Junior), to be piloted by Col. Fitzmaurice and M Bonar, did not start, as the range with the petrol pe mitted was considered insufficient.

The Allowances

Racing Number	Machine and Engine(s)	Pilots.	Speed	Flying Time	Handic Allowan
			m.p.h.	h. m. s.	h. m.
7	Desoutter Gipsy III.	Hansen and Jensen.	113.18	106 48 0	42 2
16	Puss Moth, Gipsy Major.	Melrose ...	114.32	107 43 48	40 58
47	Klemm Eagle, Gipsy Major.	Shaw	114.44	106 40 12	39 54
31	Miles Falcon, Gipsy Major.	Brook	119.29	103 13 12	36 27
2	Miles Hawk, Gipsy Major.	MacGregor and Walker.	120.57	102 7 48	35 22
60	D. H. Dragon, 2 Gipsy Six.	Hewett and Kay.	140.08	87 54 36	21 9
14	Airspeed Courier, 2 Cheetah V.	Sodart and Sodart.	140.54	87 37 12	20 51
35	Fairey Fox, Fairey Felix.	Parer and Hemsworth.	143.43	85 51 0	19 5
15	Fairey III F Napier Lion.	Davies and Hill	146.08	83 56 24	17 10
33	Monocoupe Super-Scarab.	Wright and Polando.	154.02	79 57 0	13 11
44	Douglas DC2, 2 Cyclone.	Parmentier and Moll.	168.03	73 16 48	6 31
36	Lockheed Vega, P. and W. Wasp.	Woods and Bennett.	177.71	69 17 24	2 31
19	D. H. Comet, 2 Gipsy Six.	Cathcart Jones and Waller.	182.81	67 21 36	36
34	D. H. Comet, 2 Gipsy Six.	Scott and Campbell Black.	182.83	67 21 0	35
63	D. H. Comet, 2 Gipsy Six.	Mr. and Mrs. Mollison.	182.83	67 21 0	35
58	Airspeed Viceroy, 2 Cheetah VI.	Stack and Turner.	184.44	66 45 36	Scratch

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THE AIRCRAFT ENGINEER

Owing to the number of pages devoted to the Australia Race this week it has not been possible to include our usual monthly technical supplement, *The Aircraft Engineer*. This will be published in next week's issue of *Flight*.

TRAINING AERONAUTICAL ENGINEERS

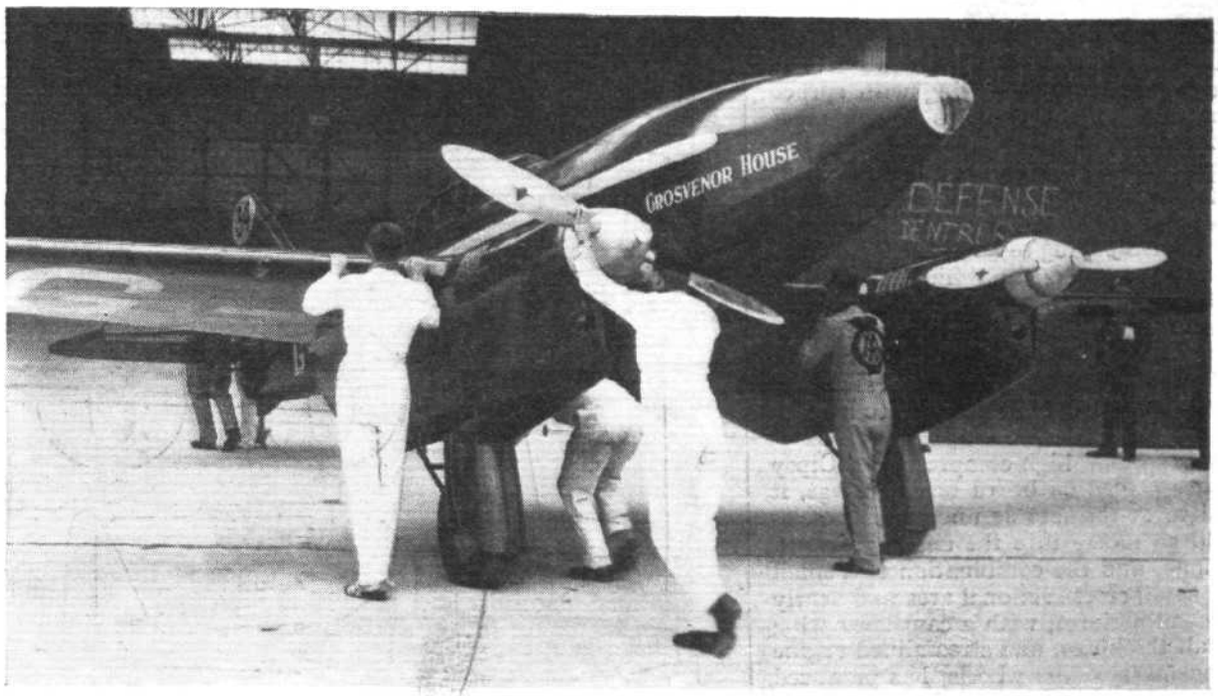
A very interesting paper under the title "The Training of an Aeronautical Engineer" was read before the Royal Aeronautical Society by Professor A. J. Sutton Pippard last Thursday. A summary of the paper will be published in *Flight* next week.

THE COMPRESSED-AIR TUNNEL

The compressed-air tunnel at the National Physical Laboratory has now been working for a little over a year, and many are looking forward with interest to an account of the work which has been done. This evening (Thursday) Mr. E. F. Relf, Superintendent of the Aerodynamics Department of the N.P.L., will lecture before the Royal Aeronautical Society on the results from the compressed-air tunnel. The lecture will be illustrated and delivered in the Lecture Hall of the Royal Society of Arts, 18, John Street, Adelphi, W.C.2, at 6.30 p.m. The compressed-air tunnel undoubtedly gives results which are a far better guide to designers than the ordinary tunnels. Many of the results which Mr. Relf will give in his lectu have not yet been published, and will be given for the fir time before the Society by special permission of the Aer nautical Research Committee.

WESTLAND AIRCRAFT SOCIETY

The following is a list of lectures, etc., arranged by th Westland Aircraft Society, Yeovil Branch of the Royal Aer nautical Society:—1934: October 25, "Some Pioneers of th Aeroplane," by J. E. Hodgson, Hon. Librarian, R.Ae.S November 1, "Aircraft Undercarriages," by G. H. Dowty November 15, "Aircraft Production Methods," by W. G Gibson. November 29, "The Modern Trend of Civil Aircra Design," by B. B. Henderson. December 13, "The Tren of Development in Military Aircraft," by Sir Ernest W. Pette December 20, "Cheap Light Aeroplane Design and Constru tion," by Leak. 1935. January 3, "Compression Ignitio Engines," by A. R. R. Fedden. January 17, "Small O Engines for Road Transport," by H. O. Farmer. January 3 "The Autogiro," by Señor de la Cierva. February 1. "American Aviation," lecturer to be announced later. Febru ary 21, "Turbulance"—dealing with the work of the Com pressed Air Tunnel, by E. F. Relf. March 14, "Test Flying, by H. J. Penrose. March 21. Annual General Meeting.



THE WINNER: Scott and Campbell Black's "Comet" (two Gipsy Six Racing Engines) at Mildenhall. (*Flight* Photo.)

THE SUCCESSFUL MACHINES

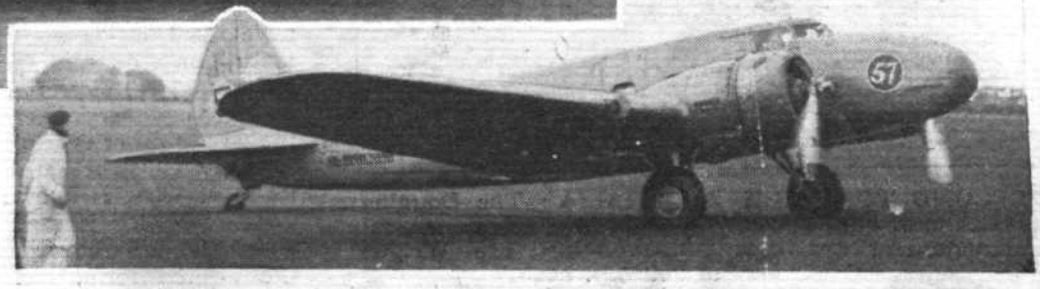
Points of Interest in the Specifications of the De Havilland "Comet," Douglas D.C.2 and Boeing Transport

WHEN the details of the route over which the England-Australia Race was to be flown were made known, there were many who held that it was impossible to produce a machine capable of a flight of more than 2,500 miles non-stop and yet capable of passing the I.C.A.N. take-off requirement, which demands that an aeroplane in the "normal" category, i.e., not stressed for aerobatics, shall be able to clear, from standing start, a barrier 20 metres (66ft.) high in a horizontal run not exceeding 600 metres (656 yards). The De Havilland Aircraft Company, Ltd., designed and built the "Comet," and in a test flight Capt. H. Broad, the firm's chief test pilot, cleared the barrier by as much as 120ft., carrying full load.

It still remained to be proved whether or not the machine would do the flight from Mildenhall to Baghdad non-stop. The Mollisons provided the proof by leaving Mildenhall at 6.30 a.m. last Saturday and landing at Baghdad at 7.10 p.m. the same day without having landed en route. Moreover, they covered the distance at an average speed of 200 m.p.h.

The De Havilland "Comet" is a very small low-wing cantilever monoplane of all-wood construction. One of its most interesting features is the wing construction. A very thin wing section was chosen because of its low drag, but

The Boeing Transport (two Pratt & Whitney "Wasps") piloted by Roscoe Turner and Clyde Pangborn. (*Flight* Photo.)



The Douglas D.C.2 (two Wright "Cyclones") piloted by Parmentier and Moll. (*Flight* Photo.)

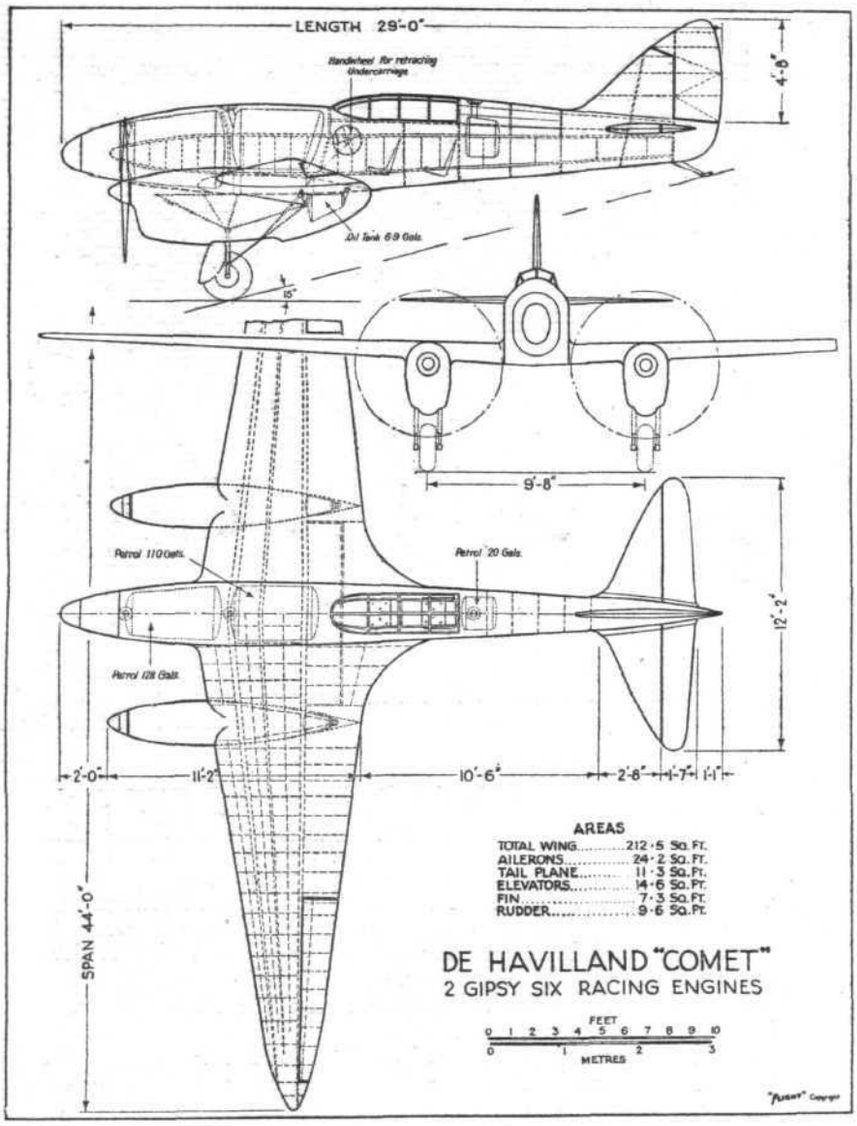
the problem of providing the necessary strength in so small a thickness was a serious one. It was solved by planking the wing with spruce strips some 2in. wide, the strips of one layer crossing those of another layer at approximately right angles. A similar form of construction is often used in boat building, and is known as the "double-diagonal" type of planking. Near the wing roots of the "Comet" there are several layers, and the thickness of the planking is more than half an inch thick.

The streamline fuselage is of somewhat similar construction, and by placing the crew far back the "break" in the lines which is caused by the windscreen has been reduced to a minimum.

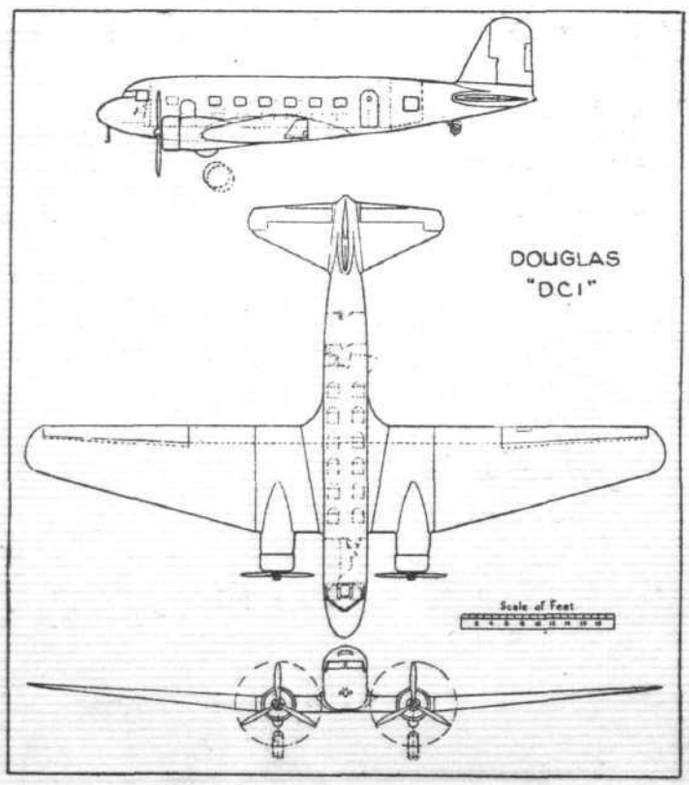
With two special high-compression "Gipsy Six" engines placed outboard on the wings, it was logical to fit retractable undercarriages, as these would go nicely into the engine fairings. This was done, and the combination of a small fuselage of small cross-sectional area and nearly perfect streamline form, with a cantilever wing of very small thickness, and streamlined engine nacelles housing also the wheels, has produced what is probably the most efficient aeroplane ever built.

Accommodation in the tiny cabin is of necessity somewhat cramped, as there is no room for the occupants to get up and stretch their legs, nor is it possible for them to change places. In a racing machine something has to be sacrificed, and in this case it had to be comfort. As far as one can ascertain, Scott and Campbell Black were no more tired than other competitors who were flying larger machines in which it was possible to change seats and alter position, so that the strain of sitting in one position for ten or twelve hours cannot have been altogether excessive.

Although built as a racing machine, it is obvious that by taking out the large petrol tanks and fitting smaller ones, reducing the range to, perhaps, 1,000 miles, and possibly transferring the cockpit to the nose of the fuselage for better view, the "Comet" could be turned into a very useful mailplane with quite a good payload and relatively economical in operation.



WINNER OF THE SPEED RACE: The de Havilland "Comet" low-wing monoplane. These general arrangement drawings show main dimensions and areas.

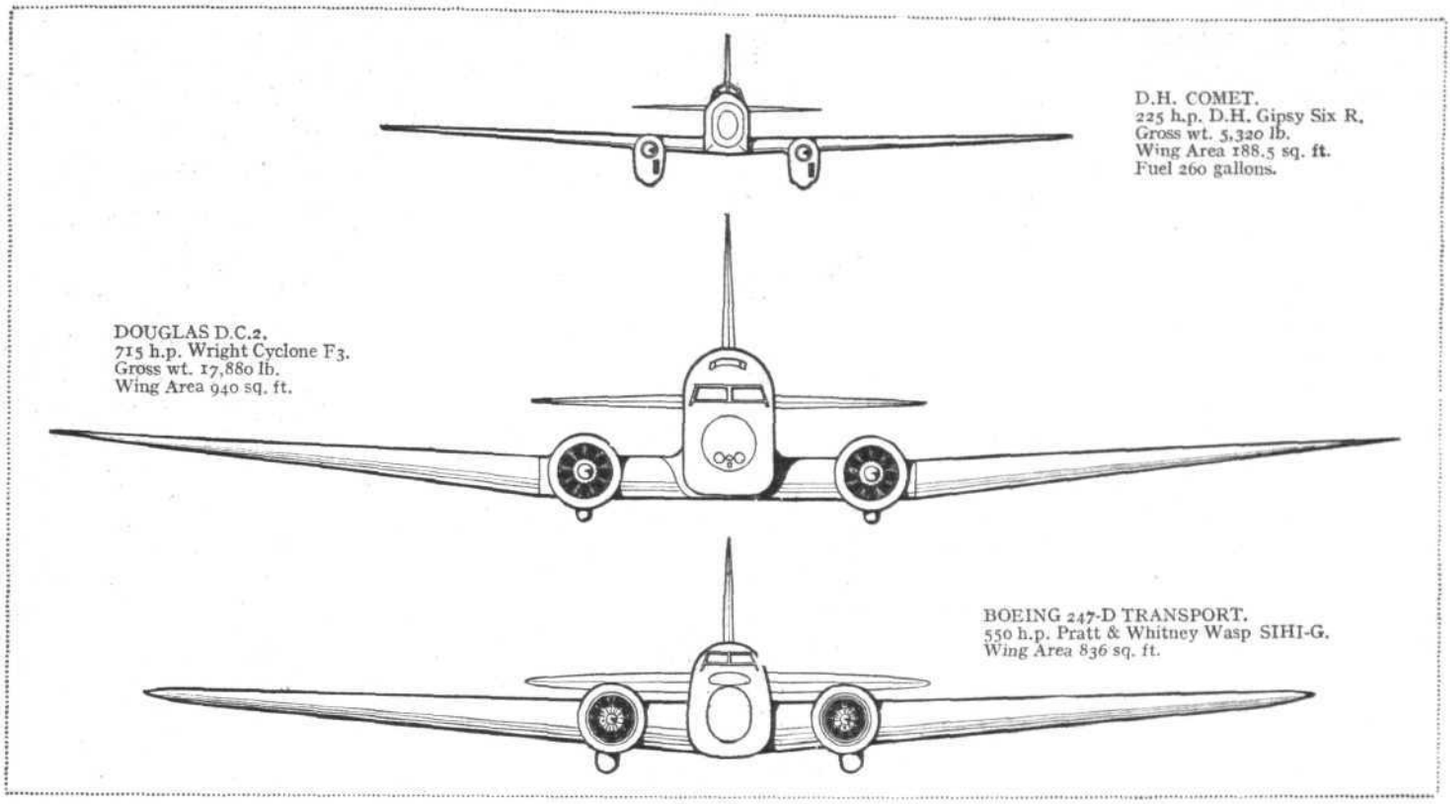


SECOND TO REACH AUSTRALIA: The Douglas D.C.2 is similar to the D.C.1 shown in these general arrangement drawings. The engines are Wright "Cyclones" of 700 h.p. each.

The Douglas D.C.2.

Designed and built by the Douglas Aircraft Company, Inc., of Santa Monico, California, the D.C.2 piloted by Parmentier and Moll was probably the aeroplane which caused the greatest admiration at Mildenhall during the days before the start of the race. Not only was the clean aerodynamic design appreciated, but the workmanship and finish of the all-metal construction came in for very favourable comment by all the technical experts who saw the machine. What has undoubtedly helped to make this very fine piece of aircraft engineering possible is the fact that initially an order was placed for sixty machines. This gave the Douglas works a chance to get down to manufacture on a quantity production basis. In Great Britain, unfortunately, aircraft constructors do not receive orders for large commercial aeroplanes on any such generous basis, the largest order ever placed being for eight machines.

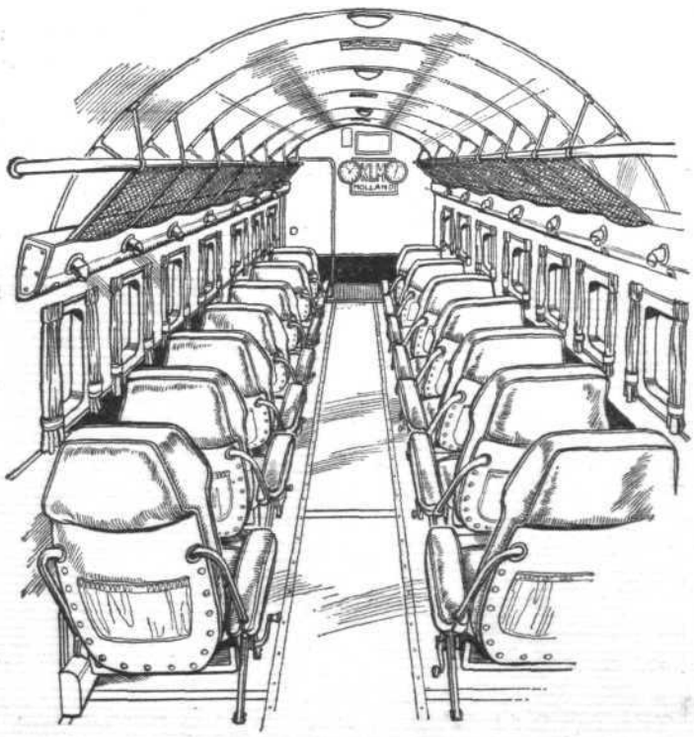
In the construction of the Douglas D.C.2 use has been made of what is known as the "stressed skin" system. This expression is used to denote a form of structure in which the outer covering is not a mere fairing used to give the desired form, but actually also takes part of the



BIG CLAUS AND LITTLE CLAUS: Front elevations, to the same scale, of the De Havilland "Comet," the Douglas D.C.2, and the Boeing 247-D. These machines were first, second and third respectively to reach Australia.

stresses. In the Douglas the metal covering (light aluminium alloy) is applied in fairly small panels riveted to the internal framework. A very smooth skin has resulted, and the actual riveting has been very carefully done, so that it is impossible to find a rivet which has not been clenched properly, or which has been clenched too hard, thereby bruising the metal skin.

With an empty weight of 12,200 lb., the Douglas D.C.2 carries a disposable load of 5,880 lb., bringing the total loaded weight up to 18,080 lb. The disposable load can, of course, be varied in accordance with the service to be operated. For the Australia race the machine was flown in its standard form as a fourteen-passenger transport, with a crew of four. During the race three passengers only were carried, but the standard cabin equipment was retained.



A COMFORTABLE CABIN: Seating accommodation is provided in the Douglas D.C.2 for fourteen passengers. The seats are adjustable for height and angle.

With normal tankage the D.C.2 has a range of about 600 miles when carrying fourteen passengers, but when only eight passengers are carried the tankage suffices for about 1,200 miles at a cruising speed of 170 m.p.h.

Two American Wright "Cyclone" engines of 700 h.p. each are mounted in nacelles projecting forward from the leading edge of the wing. They drive three-bladed Hamilton controllable pitch propellers with duralumin blades. The advantage of this type of propeller is that its pitch can be set to a fine angle for maximum revs. and power when taking off and to a coarse angle, corresponding to "top gear" for speed, once the machine is in the air.

Retractable undercarriages are provided, and, when raised, the wheels are housed inside the engine nacelles.

The Boeing 247-D

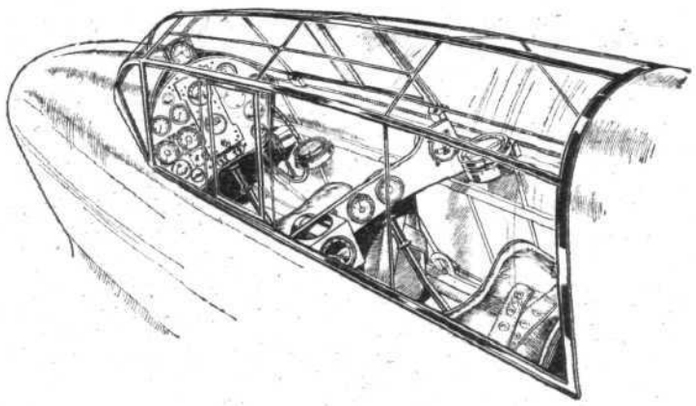
Developed from the Boeing 247 described in *Flight* of June 15, 1933, the model 247-D flown by Col. Roscoe Turner and Clyde Pangborn differs from the original model in that it is fitted with two 550 h.p. geared and supercharged Pratt & Whitney "Wasp" S1H1-G engines, with three-bladed Hamilton Standard controllable pitch airscrews and long chord cowlings instead of S1D1 "Wasps", with cowlings short chord. These modifications have added 20 m.p.h. to the top speed of the machine and a general increase in efficiency. Col. Turner's machine is the first 247-D to be flown.

Semi-monocoque type construction, with duralumin bulkheads, longerons, skin stiffeners and skin coverings is used for the fuselage. A cantilever type wing with a span of 74ft. is employed, consisting of spar trusses of square and rectangular aluminium alloy tubing, ribs, and smooth metal skin. Tail surfaces are of cantilever construction with front and rear spars braced with ribs of channel section, and smooth metal skin covering. Tests made by the U.S. Army Air Corps have shown that the fuselage can support a load 60 per cent. in excess of requirements. "Tabs" are used on elevators, rudder and one aileron to trim the machine and to correct unbalanced airscrew thrust.

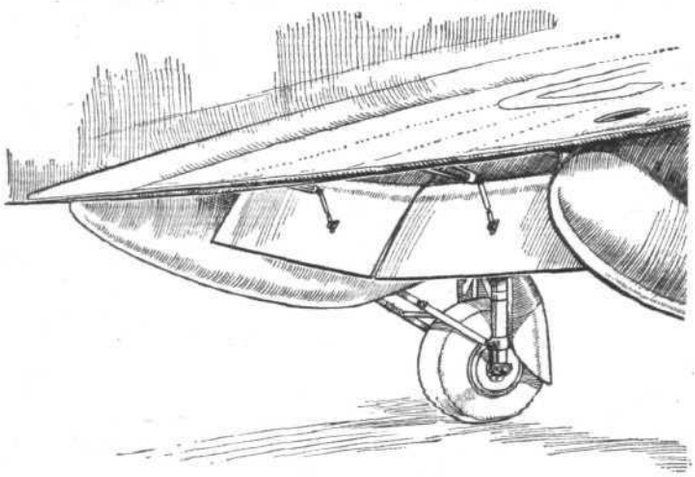
Forty-five seconds are required to retract the landing gear, which is of the divided type, using Boeing oleo shock absorbers and hydraulic brakes. Standard night flying equipment includes navigation lights, landing lights in the leading edge of the wing, and parachute flares. Dual controls are provided, and the main instrument board is equipped with thirty-five different devices. In the commercial version of the machine two-way radio-telephone equipment is located forward of the pilot's compartment. For racing purposes the wireless and D/F equipment has been placed well to the rear of the fuselage. Of the instruments provided there are three sets, whose functions are duplicated, including the directional gyro and compass, the sensitive altimeter (which records height in hundreds as well as thousands of feet) and the rate of climb indicator, the turn and bank indicator, and the artificial horizon.

Normally the cabin, which is 20ft. long and 6ft. high, contains ten seats, heating and ventilating system, dome lights, reading lamps, lavatory facilities, and is insulated against noise. In Col. Turner's machine the extra fuel tanks for long-range flying are arranged along each side of the forward portion of the cabin with an aisle between.

Figures supplied by the Boeing Airplane Company for the standard 247-D give a maximum speed of 202 m.p.h., a cruising speed at 5,000ft. of 184 m.p.h., and a landing speed of 60 m.p.h. A useful load of 4,710 lb. is carried, of which 2,582 lb. represents pay load. The empty weight is 8,940 lb., and the gross loaded weight 13,650 lb.



ROOM ENOUGH, BUT ONLY JUST: The diminutive cockpit of the "Comets." On the left, the landing light in the nose of the fuselage.



FOR STEEPENING THE GLIDING ANGLE: The air brake flaps on the De Havilland "Comets."

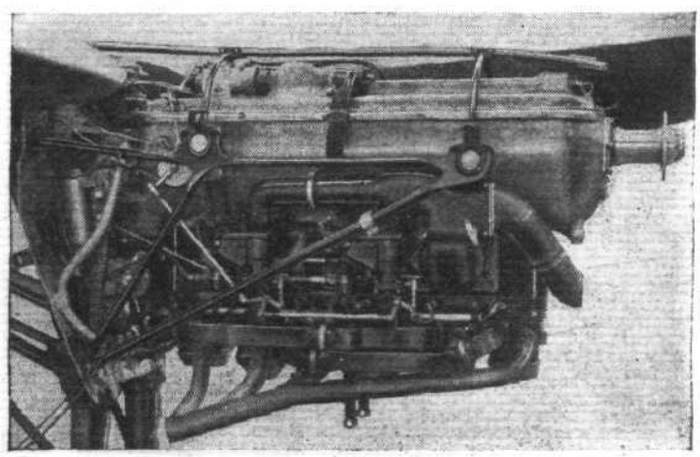
The Winning Engines

Time did not permit Major Frank Halford to design new engines for the "Comets," but a most successful power plant was produced by redesigning the overhead-valve gear of the standard air-cooled Gipsy Six, increasing the compression ratio from 5.25:1 to 6.5:1, and increasing the normal speed to 2,350 r.p.m. These modifications resulted in an increase of power, from the 200 h.p. of the standard engine to 224 h.p. of the racing version.

Although the inverted racing Gipsy Six is not supercharged, a slight degree of boost is obtained by the pressure on the carburetter intake which results from the forward speed of the machine. Probably this increases the power to about 230 h.p.

Flying at a height of 10,000ft., the engine develops 160 b.h.p. at 2,250 r.p.m. at full throttle. The fuel consumption is then 0.48 lb./b.h.p./hr.

It is of interest to note that, in spite of the increased compression ratio, the Gipsy Six racing engines run on standard service fuel to D.T.D. specification 224.



THE SPECIAL RACING ENGINE: The De Havilland Gipsy Six inverted six-cylinder air-cooled engines in the "Comets" had the compression ratio increased to 6.5 : 1 and develop 224 b.h.p. at 2,400 r.p.m.

THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS

A Knight Flight

Mr. and Mrs. R. W. H. Knight, who left Heston on October 9 on a flight across Europe and the Sahara to West Africa, reached Laghouat on October 16, and Ghardaia (S. Algeria) on October 19. They are flying a Blackburn "Bluebird" ("Gipsy I").

Pond and Sabelli Returning

Lt. Sabelli, who, with Capt. Pond, flew the Atlantic last May and crashed in Wales, has stated that when his machine has been repaired he hopes to fly back across the Atlantic to New York.

Air Ambulance for Kenya

The Nyeri Aviation Service has arranged for the purchase of a "Waco" aeroplane which will be equipped to carry either four persons or else an ambulance stretcher, doctor and attendant. It will also be fitted for blind flying.

Twenty-five Years Ago

From "Flight," of October 23, 1909.

"Just a glimpse of future possibilities of flight was accorded to Parisians on Monday, when Count Lambert demonstrated his complete confidence in his Wright flyer by leaving the Juvisy aerodrome and flying over Paris, and round, or rather circling above, the Eiffel Tower. . . . This reached, he turned round at an estimated height of about 100 metres above the tower, which itself is 300 metres high. . . . His time for the round trip of about thirty miles was 59 min. 39 sec., and, needless to say, on his return he was accorded a tremendous reception, in which Orville Wright, who happened to be present, joined."

AT MILDENHALL: Mr. Roscoe Turner, one of the favourites in the Great Race and third to reach Australia, exhibits a model of his Boeing 247 airliner.

The Hindenburg Cup

The Hindenburg Cup—which is given each year for the best amateur performance in German sporting aviation—has been awarded for 1933 to Herr Karl Schwab for his flights to Africa.

S. G. White Held Up

Mr. S. G. White, the New Zealand pilot, who left Heston for Sydney on September 18 in a D.H. "Gipsy Moth," has been held up in the Dutch East Indies owing to an attack of malaria. He hopes to be able to proceed in a few days.

Lithuanian Flight Tour Ended

The three Anbo IV (600 h.p. Bristol "Pegasus") observer aircraft of the Lithuanian Army Air Force, which started last July on a tour of European countries, have successfully completed their tour, which covered 6,524 miles, and included visits to the following places:—Stockholm, Copenhagen, Amsterdam, Brussels, London, Paris, Marseilles, Rome, Udine, Vienna, Prague, Budapest, Bucharest, Kieve and Moscow.

Across the Pacific Again

On October 21 Sir Charles Kingsford-Smith left Brisbane on his flight across the Pacific to Oakland, San Francisco. He was flying the Lockheed "Altair" (Pratt and Whitney "Wasp") machine originally entered for the England-Australia race, and was accompanied by Capt. T. Taylor. He landed the same night at Suva, Fiji, having flown 1,521 miles in very bad weather. After overhauling his machine he proposed proceeding to Honolulu on Tuesday.

International Air Congress

Some fifty delegates, representing thirty-three nations, attended the thirty-fourth International Air Congress which opened at Washington on October 6—the first time a conference of the F.A.I. has been held on American soil. Prince Bibesco, president of the F.A.I., presided, and the object of the Congress was to draft uniform international regulations for the control of great aerial sporting events, and to suggest improvements in the conditions of international air travel.

"WINDS": This is not the result of a bad landing, but an idea of the serious damage caused to aircraft and hangar at the Asia Aviation School, Tokio, by the typhoon that swept Japan recently. It may be noticed that the disintegrated machine is (or was) apparently an Avro type 504.

Roumanian Flight to Australia

Two Roumanian pilots, A. Frim and V. Dimitrescu, are, according to *Shell Aviation News*, planning a flight from Bucharest to Sydney and back, starting at the end of this month. Their machine is of Roumanian make, a two-seater I.A.R.24 monoplane (340 h.p. Gnôme-Rhône 7Kd), which has a cruising speed of 124 m.p.h. and a range of 1,120 miles.

Another Roumanian Venture

Ing. Ion Cociasu has planned to leave Bucharest this month on a flight to Hanoi and back in a Klemm monoplane (40 h.p. Salmson), which has been fitted with supplementary tanks to give it a range of 700 miles. He will take the following route, along which supplies of Shell fuel and oil have been laid down:—Istanbul, Aleppo, Baghdad, Basra, Bushire, Jask, Karachi, Jodhpur, Allahabad, Calcutta, Akyab, Rangoon, Moulmein, Pitsanuloke, Vieniane, and Thanh Hoa.

Gliding in Russia

A long-distance glider flight was accomplished at the All-Union Glider Meet at Koktebel, when Pilot Borodin flew a distance of 100 kilometres (62 miles) in a DK-2 glider designed by engineer Kolesnikov. The DK-2 glider was built in the scientific research institute of the Soviet air fleet, and is a large-span model with a second seat behind the pilot. A hazardous experiment with gliders in the air was performed by the Soviet pilot Anokhin at the All-Union Meet of Gliders at Koktebel. While up in his glider Anokhin induced a severe strain on the former, thereby breaking it in the air, and then descending safely by parachute.

A Long Business Flight

Two brothers, Mr. George Ellison and Mr. Alfred Ellison, both Birmingham business men, have just completed a long business flight to Africa and back. They left Castle Bromwich in a D.H. "Puss Moth" on September 4 and flew *via* London, Paris, Lyons, Nimes, Perpignan, Barcelona, Alicante, Oran, Algiers, Bône, Tunis, Gabes, Tripoli, Syrte, Benghazi, Tobruk, Mersa Matruh, Cairo, and thence along the Imperial Airways route to Capetown. When returning they decided to attempt a record flight to England, and made excellent time as far as Wadi Halfa. Here mechanical trouble caused slight delay, and making up for lost time they pushed straight on for Cairo, arriving there after dark; unfortunately, in landing the undercarriage and propeller were badly smashed. The airmen, however, were unhurt, and completed their journey *via* Imperial Airways, Ltd.

GERMANY'S TRIBUTE TO KING ALEXANDER: This huge wreath, bearing the words "To Our Erstwhile Heroic Opponent in Deep Sorrow from the German Armed Forces," journeyed by air, in company with Gen. Goering, from Tempelhof to Belgrade on October 17 for the funeral of the late King Alexander of Jugo-Slavia.

A Flight to Madras

Indian flying clubs seem to be getting keen on flights between India and England. The Maharajah of Vizianagaram has purchased an Avro "Commodore" (215 h.p. Armstrong Siddeley "Lynx"), and, reports *Shell Aviation News*, the Madras Flying Club has contracted to fly the machine out from England. Mr. H. L'E. Tyndale-Biscoe, assistant pilot-instructor, will be the pilot on this flight, which is due to start from Manchester this month.

Aircraft for Press Work

Aircraft are being extensively used in Australia by newspaper proprietors for conveying photographs from the scene where they were taken to the printing offices. Photographs of the arrival of the Duke of Gloucester in Australia were rushed from Perth to Sydney in the Percival "Gull" machine in which Sir Charles Kingsford-Smith broke the England to Australia record last October, the pilot calling at Adelaide and Melbourne *en route*, and covering a distance of about 2,200 miles in less than twenty-four hours. Sir Charles Kingsford-Smith took over the machine at Sydney and flew with a batch of prints to Brisbane.

British Aircraft for Chile

The Chilean Government has decided to place orders exceeding £100,000 in value for aircraft with British firms. The order includes twenty Avro training machines (three being seaplanes) and two Fairey fighters.

Sunday Flying

An Air Ministry Notice to Airmen just issued strongly urges that pilots, when flying on a Sunday, should scrupulously avoid flying in the vicinity of churches, or, where complete avoidance is impracticable, should fly over them only at such altitude as will not cause any disturbance of divine worship.

Orkney Air Ambulance

The Orkney County Council has organised a scheme for the transport of hospital patients by air. This scheme is being operated in conjunction with the Department of Health for Scotland and Highland Airways, the latter having agreed to allow a reduction of 50 per cent. on normal charter rates to poor patients carried from the islands.

Another Flight to Australia

Mr. S. P. Jackson—who had originally entered a D.H. "Moth" in the England-Australia Race, but had to withdraw it as he could not get the machine ready in time—has acquired an Avro "Avian" ("Hermes II"), G-ABIE, in which he is attempting to beat the record set up last year by Sir Charles Kingsford-Smith for a flight from England to Australia. He left Croydon on October 18.

Miss Thompson Proceeds

Miss Freda Thompson, who left Lympne for Australia on September 28, and damaged her D.H. "Moth" ("Gipsy Major") two days later, when making a forced landing at Megara, resumed her flight on October 21, when she flew to Cyprus. In landing at Morphou she injured her arm, but nevertheless continued her journey, making for Damascus.

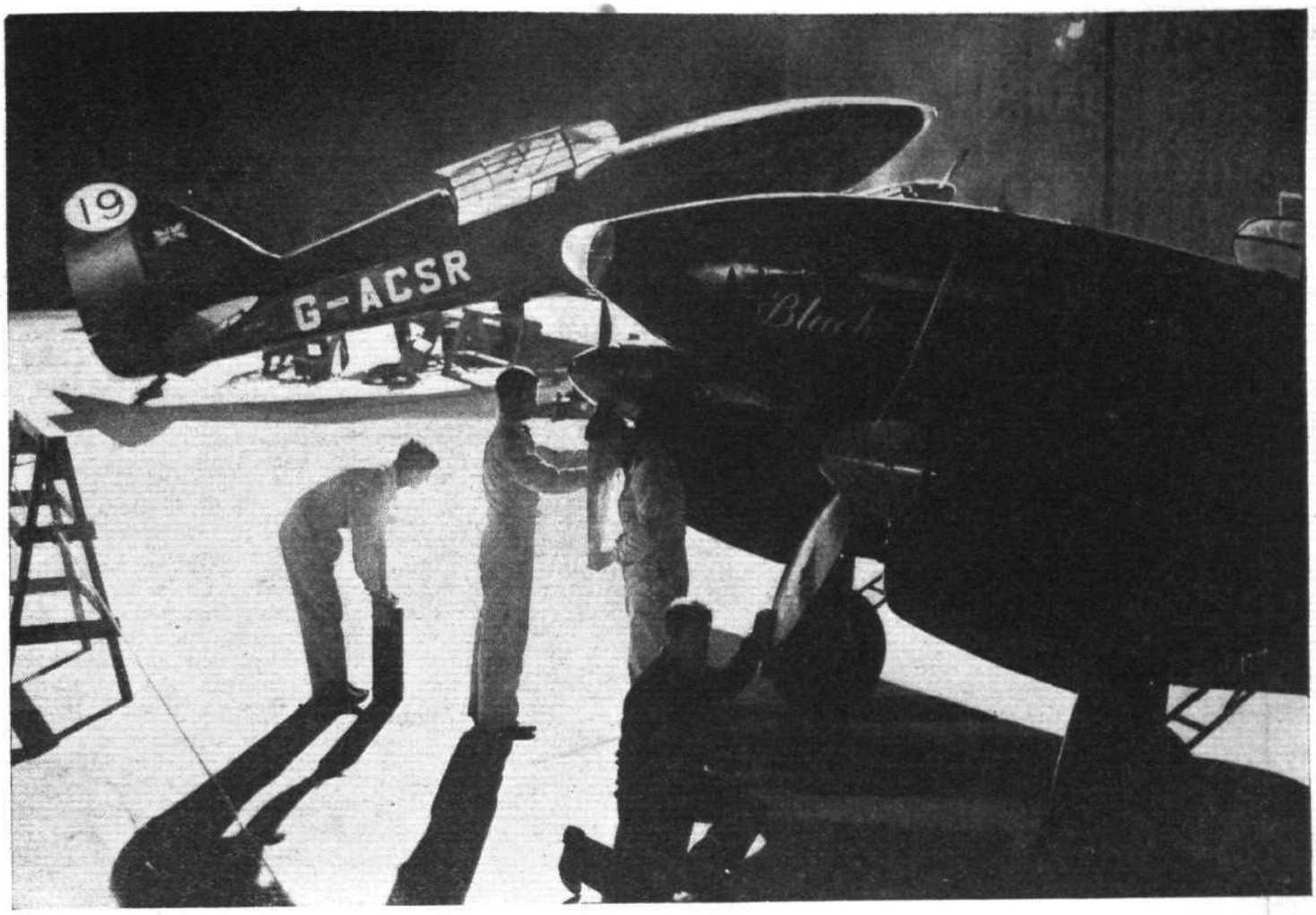
Off to Kenya Again

Brigadier-General A. C. Lewin, of Cloghans, County Mayo, who is sixty years of age, is to make his fourth flight to his estate in Kenya Colony next month. He will be accompanied by his wife, who will act as relief pilot. General Lewin has been taking a course of blind flying instruction with Air Service Training; he learned to fly about three years ago, and made his first flight to Kenya after about fifty hours solo work. On that journey he was accompanied by an instructor. Miss Higgins, his sister-in-law, is at present taking a course of instruction with Airwork at Newtownards aerodrome under Flt. Lt. Bryant.

Diary of Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in this list

Oct. 25. "The Compressed Air Tunnel." R.Ae.S. Lecture by Mr. E. F. Relf, R.Ae.S.
Oct. 27 R.A.F. v. Corinthians Football Match at Ipswich.
Nov. 8. "Speeds of Commercial Aircraft." R.Ae.S. Lecture by M. Louis Breguet.
Nov. 15. "Flying Boats." R.Ae.S. Lecture by Mr. I. I. Sikorsky.
Nov. 16-Dec. 2. 14th International Aviation Exhibition, Grand Palais des Champs-Elysees, Paris.
Nov. 21. "The Royal Air Force Training Year At Home." R.U.S.I. Lecture by Wing Com. L. L. MacLean, R.A.F.
Nov. 22. "Air Turbulence near the Ground." R.Ae.S. Lecture by Prof. Dr. Wilhelm Schmidt.
Nov. 29. "Engine Research." R.Ae.S. Lecture by Capt. A. G. Forsyth.
Nov. 30. Yorkshire Aeroplane Club Annual Ball, Hotel Majestic, Harrogate.
Dec. 6. "Recent Progress of the Autogiro" R.Ae.S. Lecture by Senor Juan de la Cierva.
Dec. 13. "Recent Research in Metallurgy." R.Ae.S. Lecture by Dr. W. H. Hatfield.



NIGHT PHANTASY : Mechanics at work on two of the "Comets" a few hours before the race

THE EVE OF THE RACE

Last-moment Work at Mildenhall : A Royal Visit : Difficulties over the Take-off Load : "Irish Swoop" Withdrawn

AT six o'clock on "MacRobertson Eve" there were twenty-one machines in the brightly lit hangars, and work was still going on. All but one—the Granville monoplane—had been in the air at least once since their arrival at Mildenhall, and there was little reason then to suppose that any would be excluded or would fail to start.

But there had been trouble over the Bellanca's airworthiness certificate. Apparently the machine had a general American C. of A. for an all-up weight of 5,458 lb., but full tests were not made at 8,350 lb. The question was—could the committee allow it to start with the full load?

During the night the inevitable decision was reached: Fitzmaurice's appeal failed, and he withdrew the *Irish Swoop* from the race. All his plans had been based on the machine's ability to reach each of the controls non-stop, and the decision was made too late for their alteration, even if the pilots had been prepared to make the journey in six-hundred-mile hops.

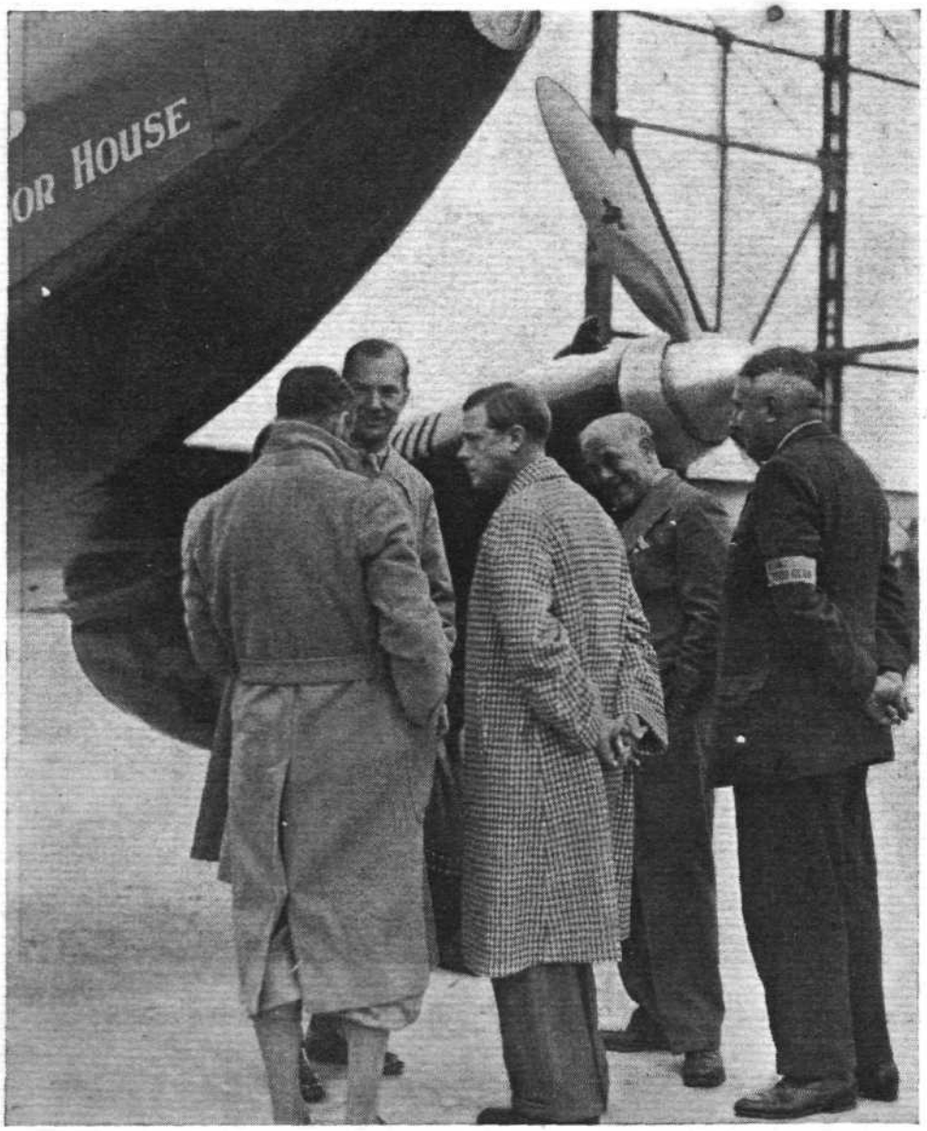
There was nothing more to be said, but it was more than a pity that the unfortunates should be flying one of the most interesting machines in the race, and one that might or might not have given us a new conception of speed and range. It was later said that Col. Fitzmaurice intended to try a full-load take-off and landing, and to make a private attack on any Australian record that was set up in the race.

Earlier in the week both Baines' Fairey "Fox" and Penny's Vultee V-1 had been given a definite extension until Wednesday evening, and Molinier's Blériot III would doubtless have been accepted. The Bergamaschi had been definitely scratched, though the machine had been built, and appeared to be more or less ready. But Wednesday was a day of weights and measures, and there were no arrivals.

Incidentally, "doughnut" wheels were not at all happy on the microscopic Avery scales used for weighting, and those of the *Cee Bee*, for instance, positively "boiled over."

Miss Cochran's machine had dropped in—using the fullest sense of the term—on Tuesday evening just as dark was falling, and Baines' "Fox" was given a further extension until noon on Thursday. Actually, there was trouble with the tank arrangements, and it was eventually brought in by the light of a bonfire on Thursday night. Late arrivals were rather fashionable, but Mildenhall is surely not the easiest place in the world to find in the dark.

On Wednesday it was learnt with regret that the Blériot had damaged its undercarriage, apparently when on the point of departure for England. The Airspeed "Envoy," to be flown by George Lowdell and Flt. Lt. D. F. Ander-



THE PRINCE'S VISIT : His Royal Highness chats with Messrs. Campbell-Black and Scott (on left) ; on the right are Lt.-Com. H. E. Perrin, Secretary of the R.Ae.C., and Mr. Lindsay Everard, M.P. (*Flight* Photo.)

son, had suffered a forced landing at St. Neots, due to a minor oil-feed trouble, on the way to Mildenhall, and the machine had been scratched.

But there was a world of interest in the new types and those which had not previously been seen in this country. The design of the unlucky Bellanca monoplane, for instance, has been based on data for a long-range reconnaissance machine for the American Navy, and the engine was, in fact, developed for Service use, and is the only one of its kind to be found on a civil aircraft. It develops 700 h.p. at 8,500 feet, though the best cruising power is obtained at between 12,000 and 14,000 feet. It weighs, without equipment, only 994 lb.

With 300 gallons of fuel on board, the *Swoop* has, according to Bonar, taken off in six seconds, and the whole 500 gallons can be dumped in 44 seconds. Bonar also gave the range, with full tanks, as 3,220 miles at 235 m.p.h., the full-out speed as 265 m.p.h., and the landing speed, with rather less than half-load, as 56 m.p.h.

The Bellanca has a welded steel fuselage, faired to an oval section, and, as the machine is a wire-braced monoplane with an inwardly retractile undercarriage, a pair of kingposts take the lift wires. The cockpits are placed well back, and Bonar can lower his seat so that Fitzmaurice may see the flying instruments when he takes over. Special D/F equipment, of visual and aural type, developed for the U.S. Navy, is used. Rollasons, incidentally, were attending to all the work on the machine.

Gradually, the number of entrants who might have hoped to reach Baghdad in one hop were being ruthlessly cut down by the race officials. Col. Roscoe Turner's *Boeing* 247-D, actually the first of its type and used by United Air Lines in America, had been licensed in the U.S. to carry 950 gallons, but three tanks were sealed to comply with the regulations, and it appeared on Wednesday that the machine could hope to get no farther than Athens without refuelling. Capt. Stack's Airspeed "Viceroy" was another unfortunate. It began to appear as if only the three D.H. "Comets," the Bellanca, and the Granville monoplane were likely to attempt to travel directly between all the controls.

The Pander S.4's performance remained something of a mystery, and Slot, the designer, claimed, when questioned, that "his memory was bad." Few people realise that this machine, renamed *Panderjager*, was originally designed as a bomber with a pair of two-row 700 h.p. Wrights before being taken over as a long-range, high-speed mail carrier and fitted with three Wright "Whirlwinds," each giving a maximum of 420 b.h.p. Apparently, the designer was not satisfied that the *Panderjager* was properly equipped for the Australian race, but all the minor troubles appear to have been cured. In its present form it cruises at a speed between 180 and 190 m.p.h.

Miss Jacqueline Cochran's original entry, the Northrop, had been withdrawn owing to trouble with the

A DISTINGUISHED VISITOR: Lord Londonderry, Secretary of State for Air, is conducted round the aerodrome by (left) Mr. Lindsay Everard, M.P. (Chairman of the Organising Committee), and Lieut. Col. F. C. Shelmerdine, D.C.A. (*Flight* Photo.)

10981

10940

COMPASS SWINGING: The "Comet" flown by Lt. O. Cathcart Jones and Mr. "Ken" Waller undergoes an important ceremony. (*Flight* Photo.)

Curtiss "Super Conqueror" engine, and many people felt that the Gee Bee was an unlikely starter, simply because it never appeared in the fresh air. The machine is a cross between the "International Courier" and the "International Supersportster" R5, so that, at a guess, its cruising speed can be taken as being quite 230 m.p.h. Flaps are fitted, and the engine is a Pratt and Whitney "Hornet" S.D. of 675 h.p., this power being developed at 6,000 feet. The machine could carry 400 gallons.

Thursday had turned out to be a bad day for the De Havilland hopes, and only continuous work for twenty-one hours had enabled the damaged "Comet" Number 19 to be completed in time for final testing and the start. Capt. Broad had, incidentally, been making a habit of flying the night shift from Hatfield in a "Dragon."

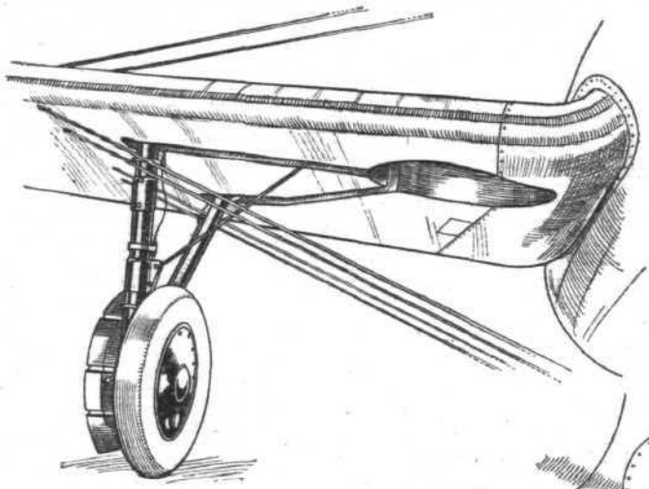
IMPRESSIVE: An ant's-eye view of the K.L.M.'s big Doug!as. (*Flight* Photo.)

So far as the spectators were concerned, this "Comet," in the course of a practice landing, swung slightly on touching, pulled up with significant suddenness, and flashed on its landing light. The fire-engine hurried out, and everybody waited tensely to learn the worst. Slowly the facts leaked out, and it was learned that there was just about a fifty-fifty chance that all might be well for the race. Both Ratier airscrews were damaged, but nothing had been really seriously disturbed. One spare was fitted, and the other damaged airscrew was rushed off to the Fairey works to be straightened out.

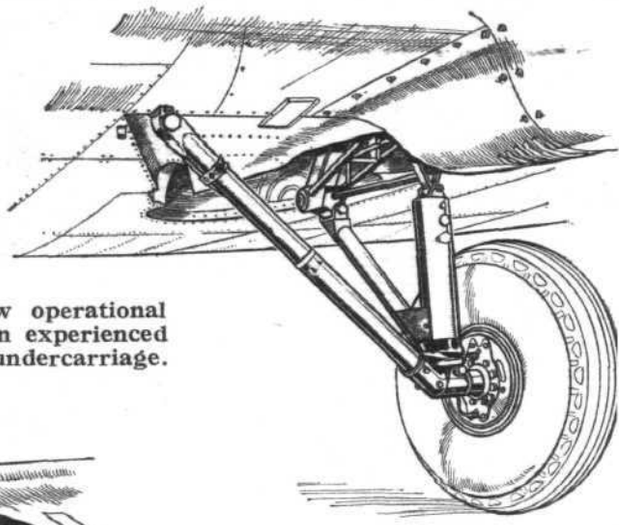
The whole affair was the result

10917

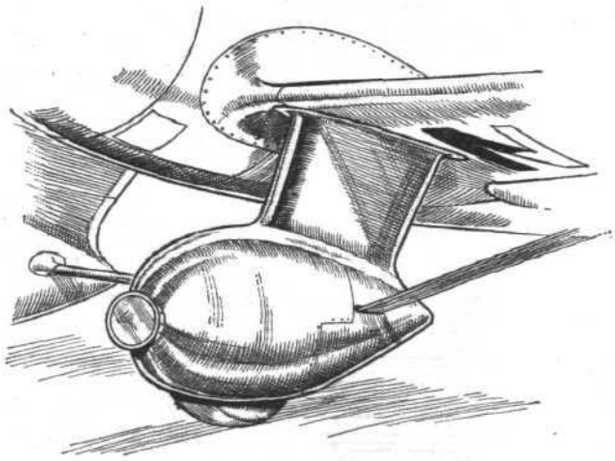
RIDE HIM, COWBOY! A mechanic secures the cowling of Miss Cochran's Granville monoplane. On the right is the Pratt and Whitney "Hornet" uncowled: Note the four venturis for the duplicated Sperry Artificial Horizons and Gyro-Compasses. Miss Cochran unluckily got no farther than Bucharest. (*Flight* Photo.)



(Above) One half of the ***Irish Swoop's*** retractile undercarriage. Note the receptacles for oleo leg, radius rod and wheel, and the covering for the latter. The machine was, unluckily, excluded.



(Right) Very few operational failures have been experienced with the Boeing undercarriage.

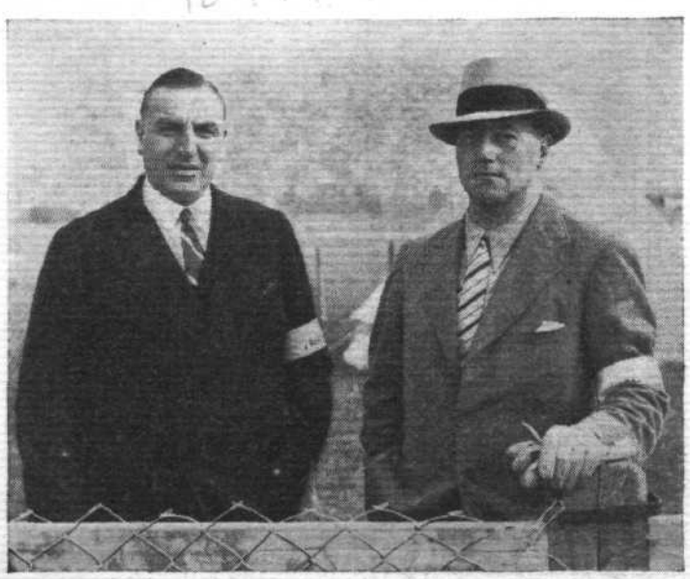


(Left) The undercarriage of the Granville monoplane is sturdy and clean. It stood up to some hard knocks at Mildenhall. The landing lights in the "spats" are interesting.

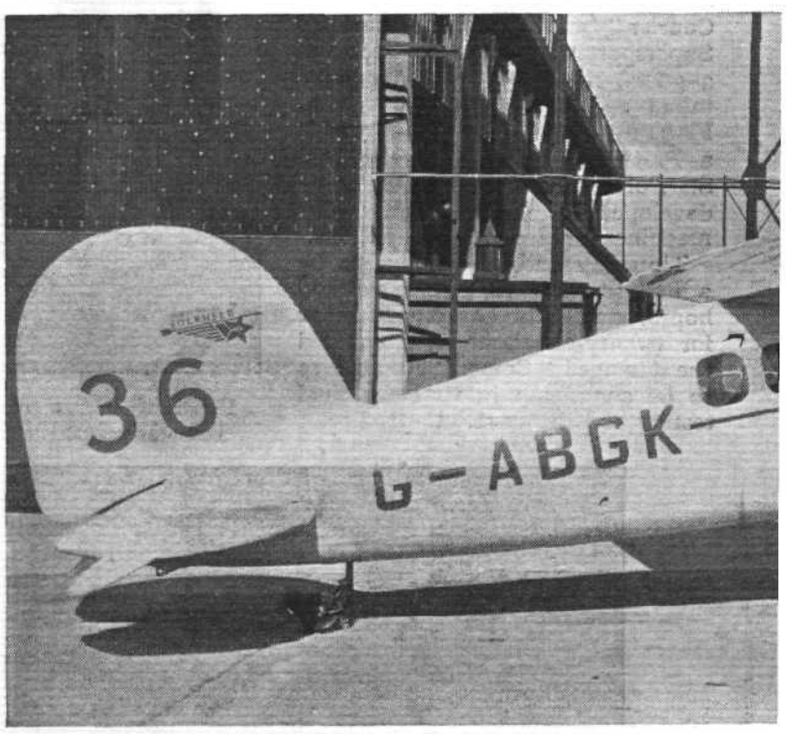
of an unfortunate slip of memory and a combination of circumstances. When the wheels are right down engine cooling is slightly impaired, and during practice landings and circuits the "Comet's" undercarriages were lifted, when in the air, to the extent of four turns of the operating wheel, and Lt. Cathcart-Jones neglected to put his fully down for the landing. A new technique of "rumbling" approach had been developed, and, as the throttles were being opened at intervals, the warning light, which operates in conjunction with the throttle position, failed to warn. The "Comet" just did not nose over, and only the radius rods were damaged. The landing light, incidentally, was switched on accidentally, but it certainly acted as a very efficient "SOS" signal.

Meanwhile, troubles with Press permits had been practically smoothed over, and the time had passed when one or other of the many officials would burst into a hangar and order everybody out with "I-don't-care-whether-you've-got-a-pass-or-not" methods and pugilistic facial expressions. Panics only occurred when crowds of more than ten people were noticed to be examining a machine, and the general public was taken around in carefully shepherded flocks.

Parer's Fairey "Fox" was suffering, it appeared, from a relentlessly weeping radiator, and life was not at all a simple matter for the crew. The modifications, incident-

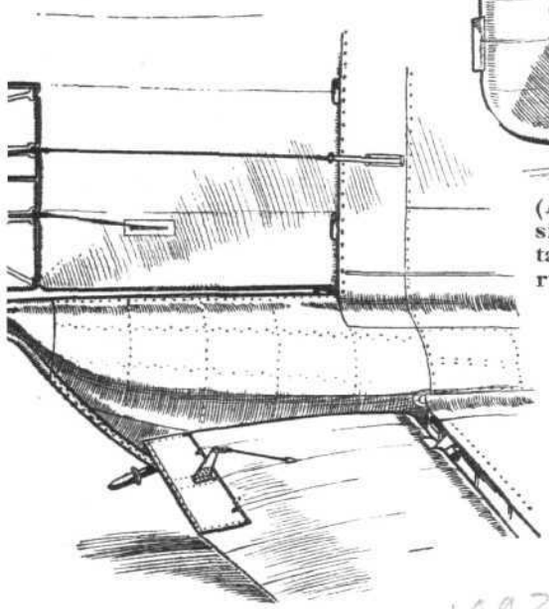


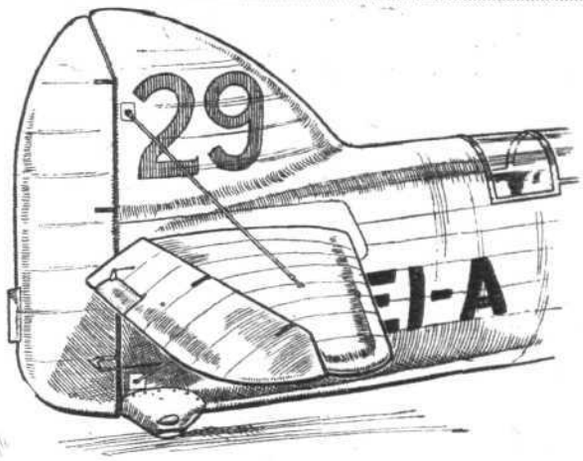
THEY SHALL NOT PASS! Mr. J. J. Leffs, Aerodrome Control Officer, and Capt. A. G. Lamplugh on the watch for gate-crashers. (*Flight* Photo.)



FILLING-UP: The Lockheed "Vega" (Pratt and Whit and Bennet were unlucky, the "Veg

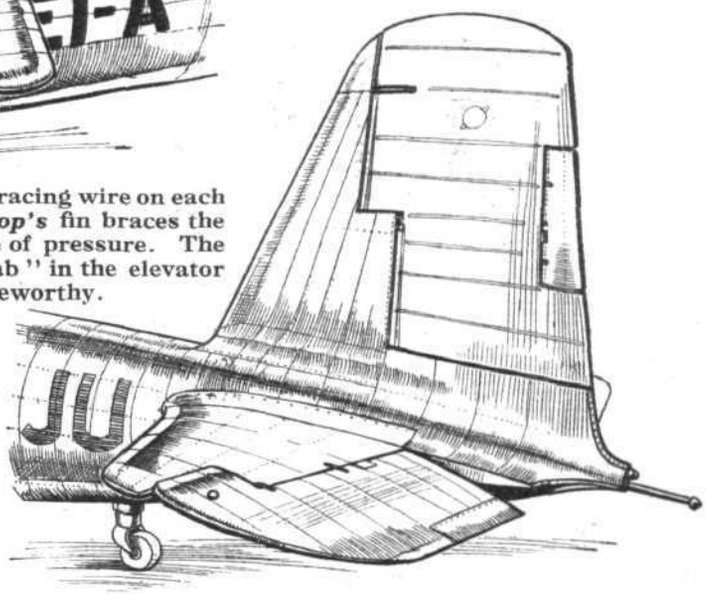
(Below) The fuselage line blends into the trailing edge of the rudder on Roscoe Turner's Boeing. Of the two auxiliary surfaces in the rudder one is a "servo rudder" and the other a "tab" for trimming. Note also the "tab" in the elevator.





(Above) A single top bracing wire on each side of the *Irish Swoop's* fin braces the tailplane on the centre of pressure. The rudder shape and "tab" in the elevator are also noteworthy.

(Below) Each fixed surface in the *empennage* of the Douglas D.C.2 is carefully filleted where it joins the fuselage. This skeleton shows also the balancing of the movable surfaces and a portion of the trailing antenna.



Wasp" S.C.) being fuelled for the start. Messrs. Woods ting the dust at Aleppo. (*Flight* Photo.)

ally, conceived by Shackleton and carried out by N. F. S., include extra tanks—one between the cockpits and the other faired in below the fuselage, and a filled-in "cut-out"—doubtless by way of increasing the wing area in the handicap formula. As was mentioned in last week's issue, a Dove "Cloudring" is mounted in the pilot's screen.

The last day of the preparations was one of surprises. Visits were paid to Mildenhall, both by Their Majesties and by the Prince of Wales. His Royal Highness was, of course, expected, and his D.H. "Dragon" came in at a quarter past two, but most of the visitors were taken by surprise when they learnt that the King and Queen were expected.

Lord Londonderry, too, arrived from Hendon during the morning in a Hawker "Hart" of No. 24 (Communications) Squadron, escorted by another "Hart" of No. 601 Squadron A.A.F., and the party travelling in the Douglas arrived in an F.VIII with the mails. K.L.M. were making the most of a very wonderful opportunity.

As the sun sank on this fateful day, the Lockheed "Vega"—only representative of a very fast family—was taken out for a crisp airing; the long-awaited Number 19 was successfully and very effectively tested after repairs; and Miss Cochran's Gee Ree was run up on the apron emitting a healthy note.

The stage was set.

THE FLYING DUTCHMEN: Moll and Parmentier, who, with the big Douglas D.C.2., reached Australia second. (*Flight* Photo.)

The Outlook

A Running Commentary on Air Topics

On Booking Facilities

THERE is a distinct lack of booking facilities for those what want to travel by air. Railway Air Services make use of the agents who handle railway train tickets, but those agents cannot deal in tickets for the other internal air lines. These independent operators have established their own agents in many parts, but the ordinary traveller would have to do a considerable amount of telephoning, even in London, before he could find out where to book a ticket. What is wanted is a nation-wide organisation somewhat on the lines of the theatre-ticket offices, with branches in every town where passengers could book tickets for all air lines. It is the one form of co-operation which would inevitably help all the participating companies. It would get more people into the air and, by through-bookings, result in an increased use of all lines.

How it Should be Done

ON the very day following that on which *Flight* went to press last week, with the remarks on accident reports appearing on this page, we received the U.S. Department of Commerce Bulletin, giving the fullest statistical details of all the accidents that had occurred on American air lines beween January and June of this year. In this brochure the causes of accidents are defined and distinguished in the fullest detail, and the significant fact that more than half were caused by "errors of judgment" on the part of the pilots was not glossed over.

Why should it be possible to read such a report of accidents in another country? During next year we shall undoubtedly learn—reading between the carefully phrased lines, of course—the facts contributing towards any accidents that occurred in this country *last* year, yet a report is only useful when it is published almost immediately after the accident concerned. Then and then only can safety measures be taken and the general public be given new confidence.

An Unfair Accusation

A REPORT from the Rome correspondent of the *Daily Telegraph* gives the following translation of a passage from the Rome paper *Messaggero* regarding the Australia Race:—

"The time allowed to make ready for the race was so short that none of the competitors except the English had time to build a machine which conformed to the restrictive rules devised by the organisers.

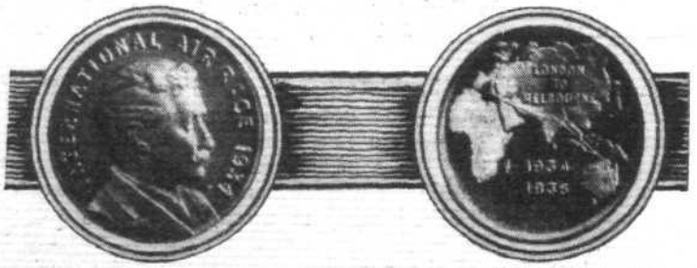
"This gives the English an advantage so enormous that only very exceptional bad luck can prevent the three De Havilland machines from winning all the available prizes. The English, and English alone, doubtless warned in due time as to what was being organised, built three De Havilland Comets for the occasion, which are able to fly 2,700 miles at a speed of 240 m.p.h. without loading up.

"The organising committee, as if it wanted still further to assure victory for the three favourite machines, has ordained that the other competitors may not carry a load of petrol equal to that contained in the De Havilland tanks."

This statement is a direct accusation of dishonesty, and must be repudiated with all the emphasis at our command. The conditions of the race were published for the information of the whole world simultaneously, and every country had the same time and opportunity to design and build special machines for the special conditions of the race, if so inclined. There was absolutely no previous information given to any British firm. Equally unjust is the accusation that "the organising committee ordained that the other competitors may not carry a load of petrol equal to that contained in the De Havilland tanks." It is putting the cart before the horse. The rule was made that each machine must conform to I.C.A.N. regulations as regards load, etc., and the certificate of airworthiness from the country of each machine was accepted by the Royal Aero Club. The De Havilland designers had the conditions before them, and designed a machine which would fulfil those conditions while carrying a load sufficient to reach Baghdad without refuelling. It was free to anyone else to do the same. Italy is a country which produces splendid sportsmen; it is a great pity that on this occasion an Italian newspaper should make unjust and unsporting accusations which damage none but those who make them. As some people judge a country by its newspapers, this outburst is likely to mar the fair fame of Italy as a sporting country. We feel sure that all those good sportsmen, the Italian pilots, must feel ashamed that an Itaiian paper has descended to such depths.

The Tail of the Comet

ASTRONOMERS say that when a comet passes so near the earth that our planet actually goes through the gaseous matter which composes the tail, a certain amount of the matter of the tail is left behind in our atmosphere and adds so much to the actual contents of our globe. It would be no great straining of metaphors to say that within the last three days the aeronautical world has passed through the tail of a "Comet." What, we wonder, has it left behind for us? A "Moth" from the same quater of the empyrean once brought about a revolution in the conditions affecting civil flying all over the world. Surely the effect of the "Comet" will be no less. As it now flies, the "Comet" is just a racer, but it is anything but a racing freak. With suitable modifications it seems to presage a very fine mail carrier. Sooner or later, we feel convinced, the world will have to come to the conclusion that air mails must not be delayed for the sake of the comfort of passengers. We know that we can get our mails through to Australia in, say, three days; so why not do it? They would not travel such 2,500 miles non-stop, and they would not call for three sleepless nights from the pilots. The relay system would ensure efficiency, and would not add very much to the time of the journey. Here is an opportunity for our very wide-awake Postmaster-General, Sir Kingsley Wood. No doubt he is already considering the matter.



FOR ALL WHO COMPLETE THE COURSE: Obverse and reverse of a gold medallion which will be awarded to all competitors in the Australia Race who finish the course within sixteen days.

PRIVATE FLYING

A SECTION FOR OWNER-PILOTS AND CLUB MEMBERS

NOTES
by
LORD SEMPILL
A.F.C., F.R.Ae.S.

MY tour to Australia and the Far East, if I am able to complete my schedule, will involve a journey of between thirty and forty thousand miles. It was, therefore, essential, apart from the special fitments to be incorporated, that my machine should be thoroughly overhauled, although it was already in a good state of maintenance.

A thorough examination of the structure and a top overhaul of the engine were undertaken, it being decided to take this opportunity of renewing the Certificate of Airworthiness, which was due to expire before my tour was likely to be completed. The machine was trestled up and closely scrutinised, the usual procedure being adopted. All inspection covers were removed and the fuselage examined. This being of metal construction, everything was found to be satisfactory, although particular attention was paid to the rear diagonals, which, as originally designed in this type of machine, had shown a tendency to crack. A modification previously incorporated seems to have overcome the weakness in a satisfactory manner.

The various controls in the fuselage were checked up and found to be in good adjustment. A link bolt in the actuating gear of the tail plane and the balance cable of the right aileron control were renewed, parts being lubricated as necessary. A complete overhaul was given to the undercarriage and the brakes checked. The brakes on the "Puss Moth" I find in practice more satisfactory than those on the later edition of this type, the "Leopard," and, due to the shorter length of the brake control cable, they are easier to keep in adjustment. Efficient wheel brakes are a very desirable feature on any machine, but certain aircraft of quite modern design which I have flown recently leave much to be desired in this connection, and, unless great care is taken to see that all is in order, the brakes can be positively dangerous. More than once I have wished that the machine I was flying was not so equipped, as it is better to be without them than to find them deficient when one is relying on their effective operation.

Routine Inspection

THE main planes were opened up at all inspection points, and, with the exception of the renewal of two flap hinges, nothing required to be done. All doped surfaces were found to be in good order. One or two small replacements were made in checking over the tail plane and rudder, as I decided to leave nothing to chance where any worn parts were concerned.

An examination of the airscrew hub and bolts showed them to be in perfect order, and the checking-up of the Fairey-Reed metal airscrew completed the overhaul of the machine.

Whilst this normal routine work was being carried out, steps had been taken to design the auxiliary tank installation which had been thought to be necessary for such an extended flight. Various suggestions were considered, and it was decided to construct a ten-gallon tank which would fit into the roof at the rear of the cabin where the luggage rack is normally placed.

A departure from standard practice such as this necessitated Air Ministry approval, and a design was therefore got out and drawings prepared for submission to the proper department at the Royal Aircraft Establishment at Farnborough. Every assistance was given by the department concerned, and with one or two minor modifications the scheme was approved without loss of time. One records with much appreciation the help and advice given by the responsible officials in this connection.

A cylindrical tank was installed on two steel tube cross bearers fixed to the sides of the fuselage, the rack being removed. It was considered desirable as a precaution to stiffen up the fuselage to take this additional weight by fitting also two wooden bracing members.

The main fuel supply on my machine being fed by gravity from the wing tanks, an adequate flow by the same system from the auxiliary tank required careful thought, and tests were made to ensure that there was sufficient head of petrol in all flying positions. The fuel from the new tank was led into the main pipe line through a three-way union, and a tap was fitted to cut off the supply when the main tanks were being drawn upon. This was necessary, as otherwise the auxiliary tank, being at a lower level, would have tended to overflow at the vent by reason of the gravity flow from the wing tank. In order to guard against the possibility of air locks, great care had to be taken, and a gauge of the dome type supplied by S. Smith and Sons was fitted. A flow test from the new tank gave a reading of twenty gallons an hour, which, in view of the fact that the normal consumption of the machine is just over five gallons an hour, gives more than an ample margin.

In operation, the new tank proves satisfactory in every way, and makes a very neat installation. For the benefit of any "Puss Moth" owners who may wish to increase the range of their machine, I might mention that the work was carried out at the workshops of the London Air Park at Hanworth, the Drawing Number being N.F.S. 164B. This design, having been officially approved, would be available for general use without delay.

Careful Testing

WITH a view to ensuring the satisfactory working of the whole petrol supply system, the wing tanks were flushed out and inspected before coupling up the auxiliary tank, particular care being taken to see that the gauges were in perfect order and functioning properly. As these are of the immersed-float type it was necessary to see that the protective varnish was in no way defective, and the makers' instructions embodied in D.H. Technical Notes were closely adhered to in making this examination. A test of the flow from the main tanks to the carburetter was taken, and found to give the satisfactory reading of thirty-four gallons per hour. [*Cont. on page* 1132]

Private Flying

Having arranged for increasing the range of the machine by approximately two hours, it became desirable to consider a reserve oil supply, although the ordinary tank fitted as standard to the machine gives an ample margin.

Not wishing to take any chances in this connection, it was decided to fit a larger tank of 2½ gallons capacity. This, of course, is more than adequate, but it is satisfactory to know that one has an extra supply in the event of it being necessary to stop to refuel where the particular oil being used is not available. Of course, one carries a gallon or so in the machine in case of emergency, but when one has shipped all the luggage one requires for such a journey, together with necessary spares, there is not a great deal of room for loose tins of lubricant.

I find I have not space to deal with the overhaul of the engine and the means taken to ensure adequate cooling of the motor when flying in the tropical parts of the route. This I must leave till next week.

FROM THE CLUBS

Events and Activity at the Clubs and Schools

MIDLAND
Bad weather at Castle Bromwich during the past week has prevented much flying being put in, the total for the week being 8 hours 5 minutes—dual 6 hours 25 minutes, solo 1 hour 40 minutes

LIVERPOOL AND DISTRICT
As in most other parts of England, weather conditions have been particularly unfavourable for instructional flying at both Hooton and Liverpool Airport. Club machines put in a total of 31 hours 50 minutes.

READING
A landing competition for members is being held on Sunday next, commencing at 11 a.m., and carrying on throughout the day. The three members gaining the best scores will be chosen to represent the Club against the Brooklands Aero Club, who have challeneged Reading to do battle on Sunday, November 11.

CARDIFF
A total of 15 hours 55 minutes' flying was logged during the past week, of which 11 hours 10 minutes were for dual instruction, 4 hours 5 minutes for solo flying, and 40 minutes for tests. A Badminton and Table Tennis Section has been formed the court and table being floodlit in the evening, and there are prizes for the winning teams.

CAMBRIDGE
Flying times for the week were above the average for the time of the year, being about 18 hours dual and 16 hours solo. Light winds and rain affected solo flying on one or two days during the week. One new member, Mr O. Gatty, has joined Marshalls' School and Mr. C. Dowainy has returned for advanced flying instruction. Three navigation and one charter flight were made during the week.

HATFIELD
The very bad weather conditions of last week and the departure of most people for Mildenhall Aerodrome were responsible for a very quiet week at the London Aeroplane Club, Hatfield The flying time was 41 hours. Mr. A. Maconochie carried out all his "A" licence tests, and several entrants in the England-Australia Race put in some blind flying practice in preparation for the great event.

CINQUE PORTS
There was no flying on the first three days of last week, due to high winds and rain, but in spite of this the Club managed to put in a total of 30 hours flying, dual and solo. Mr. H. Cheeseman, the Club's flying policeman, made a successful first solo. Mr. W. E. Davis, the Club Manager, is away for one week on a well deserved holiday. In the last three months or so, in addition to running the Club and the very successful International Meeting, he has been managing Bernard Rubin's entry in the Australia Race. Two new members joined during the week.

KARACHI
During the month of September, Club machines carried out 515 flights, which accounted for 284 hours 55 minutes. They also put in 10 hours' night flying.

BRISTOL AND WESSEX
Flying hours for the past week only totalled 23, weather conditions being very poor. Surfacing work is being carried on on a small portion of the eastern end of the aerodrome. Members have taken a keen interest in the map and latest bulletins of the England-Australia Air Race displayed in the Club House. During the week fifty members of the Women's Electrical Association visited the Airport, most of them having joy rides.

HERTS AND ESSEX
Flying times for the past week were, dual 22 hours, solo 24 hours—a total of 46 hours. V. B. Mukadan carried out a successful night flight from Croydon to Lympne on October 11. Blind flying instruction on the new machine is very much in demand. Monthly Dances are to be held in the enlarged clubhouse, the first being held to-day (Thursday). New members include S. M. Shute, V. G. Stanton, B. M. Thakur (India), L. R. Vigil (Peru), and H. J. Bacon.

BROOKLANDS
Inclement weather last week reduced the total flying time to eighty hours—forty-five hours dual and thirty-five hours solo In spite of the bad weather, however, Capt. Findlay flew Mr. Downing to Paris and back on the Monday. New members include Messrs. Denny, Wedderbourne and Wagstaff, the latter from South America. Capt. Findlay, who is an examiner for the Guild of Air Pilots and Air Navigators, is very busy coaching pupils for their Instructor's Course.

YORKSHIRE
During the past four weeks Club machines have flown a total of 47 hours 15 minutes. Messrs. J. L. Lund, of Bradford, and W. Westoby, of Leeds, have obtained their licences, while R. E. Morris (Ground Engineer), of Yeadon, made a first solo. Cross-country flights were made during this period to Turnhouse, Hooton, Bournemouth, and Plymouth. Several new members, flying and non-flying, have joined the Club. The Annual Ball will be held on November 30 at the Hotel Majestic, Harrogate. Tickets, 15s. each.

SOUTHERN
Club hours last week totalled 16 hours, solo 11 hours, dual 5 hours. Considerable alterations are being made to the Club in the form of a separate and enlarged bar and much improved catering facilities.

A party of members watched the start of the Melbourne race, taking a special interest in Mr. Campbell Black, who did a refresher course with the Club in 1929. Mr. A. G. Head has been appointed Hon. Sec. in place of Capt. Titterington. Mr. Head is a club pilot of several years' experience.

The Viceroy's Cup

The regulations for the Viceroy's Challenge Trophy handicap air race, which will take place on Saturday and Sunday, December 15 and 16, have now appeared. All pilots with machines under 400 h.p. are eligible to compete, but there will be a special prize for the first Indian-trained "A" licence pilot to come home. No dual control fittings are to be used, but repairs and replacements will be permitted.

The course covers approximately 1,270 miles, starting at Calcutta at 8 a.m., and finishing at Bombay on the second day, with compulsory stops at Gaya, Cawnpore, and Khandwa, competitors spending the night at Cawnpore, 570 miles from the starting point. All machines must reach the finish before 6 p.m., and the time spent at Gaya and Khandwa will count as flying time.

Flt. Lt. Cannon and the Secretary of the Aero Club of India and Burma are the handicappers, and the estimates will be worked out in the usual manner, with allowances for special alterations to the machines.

In addition to the Viceroy's Trophy and the Speedolene Trophy for the trained "A" licence pilot, there will be second and third prizes, the Wakefield Trophy for the fastest time, the Texaco Cup for the first lady pilot, and another prize for the winner at the Cawnpore control. Entry forms may be obtained from the Secretary of the Royal Aero Club.

AIR SERVICE TRAINING

A Report on Recent Activities : The W/T Courses

AT the new term, which commenced at the beginning of September, fourteen students joined Air Service Training School at Hamble to take the three years' commercial course which is designed for pupils taking up aviation as a career. The curriculum is so arranged as to train for administrative as well as flying employment. On the conclusion of his course the student is in possession of the pilot's "A" and "B" licences, 2nd class navigator's licence, ground engineer's "A," "C," and "X" licences, and the wireless operator's licence.

New Arrivals

The new students are Messrs. Beach, Birchenough, Burns, Golwala, Grubb, Mildmay, Ohrnberger, Ray, Rahman, Roberts, Stewart, Tringham, Walker, and Whincop. Altogether there are thirty-five students taking this course at present. Other new arrivals are Mr. J. F. Bardolph, for the pilot's "A" licence; F/O D. W. Lydall, for 2nd class navigator's licence; F/O H. O. Woodhouse and Mr. T. S. Lucas for W/T and ground engineer's "A" and "C" licences. Messrs. P. H. J. Perkin, J. H. Austin, and H. Irani (from India) are taking the ground engineer's course, Mr. V. N. Buchan is receiving advanced flying instruction in preparation for his "B" licence, and Mr. O. C. Hankey, an ex-pupil, has returned to qualify for the W/T air operator's licence. Training in the maintenance of aircraft and engines is being given to D. Donaldson, N. Hoare, and K. Ramehandani, who have arrived from the College of Aeronautical Engineering at Chelsea, prior to taking their ground engineer's licences. Messrs. R. G. Allen, E. J. Cassel, F G. Engell, D. H. Nock, F. Schetty, T. M. McGrath, and Capt. Wellesley-Wesley have obtained their pilot's "A" licence, Mr. A. M. Wood has qualified for the W/T air operator's licence, and Mr. A. S. Hell for the R/T licence.

F/O R. C. Parker, having completed his instructor's course, has been categorised A.S.T. "B." Delivery having been taken of a C.30 Autogiro, the school is now able to offer training on all types of heavier-than-air machines.

Among the visitors to the school during the past month were Sir Maurice and Lady Jenks (ex-Lord Mayor and Lady Mayoress of London), Lt. Col. Shelmerdine (Director of Civil Aviation), and Major R. L. Nunn, Deputy Director of Public Works, Singapore.

In spite of the bad weather experienced during September, the month's total flying hours reached 828. The total since January now stands at 6,362, almost equalling the flying time for the whole of last year. In order to meet the demand for wireless telegraphy courses, the following arrangements have been made: (1) Long W/T course, which takes six to eight months and is intended for those who have had no previous experience of transmitting and receiving. There are two terms a year, commencing February 4 and September 2, 1935, and costing £55. (2) Short W/T course, occupying four months, for those who can transmit and receive up to the rate of fifteen words a minute. This course is run specially for Short Service officers, who should have no difficulty in being able to read and transmit up to fifteen words a minute on leaving the Service. There will be two terms next year, commencing April 1 and September 2. The cost is £40. (3) R/T course with a duration of two weeks, for those who wish to obtain R/T licences only. Students taking this course will receive no practical instruction in the air. Four courses will be held next year, commencing January 7, May 6, August 6, and October 1, and costing £10.

Extra Courses

The actual instruction in the above courses occupies about four hours a day, and candidates can therefore take some other course, such as 2nd class navigator's or that of ground engineer, at the same time. This is particularly advantageous to the Short Service officer who leaves the Service with 800 or 900 hours' flying on various types of aircraft but is unable to obtain an appointment in commercial aviation owing to his not being in possession of other necessary qualifications, such as the P.M.G.'s, W/T air operators', the 2nd class navigators' and the "A" and "C" ground engineers' licences.

The duration of the course for the 2nd class navigator's certificate is five months, and two terms are held annually, commencing in October and May; fee, £50. A candidate taking the wireless and navigator's courses together should be able to complete both within ten months.

Birmingham's Airport

Approval has at last been given to the application of Birmingham City Council for the compulsory acquisition of 500 acres of land at Elmdon for the erection of a municipal aerodrome. The estimated cost of the airport, which is expected to be in use by next May, will be £100,000.

Landing Ground Amendments

From the Automobile Association it is learnt that the Hitchin landing ground has been withdrawn from the Register, as the land is being built over, and that the Lossiemouth ground will probably be ploughed up during the month—though details of an alternative ground will be issued shortly. There are haystacks on the southern boundary at Clifton Hampden; Kirkby Moorside now has a petrol pump installed; Leeming has a new clubhouse; Sheffield has a rough S.E. corner with long grass; and Wispers, Midhurst, has lost the haystacks which were in the S.W. corner.

A Club for Edinburgh?

The latest effort to form a flying club in Edinburgh is sponsored by Lord Nigel Douglas-Hamilton, the C.O. of No. 603 (Bomber) Squadron of the A.A.F. A number of well-known people are interested, and it seems possible that after a series of failures, Edinburgh may at last have a club and a really good aerodrome.

Autogiro Instruction

Flying instruction on the Airwork Autogiro has now started. On this type flying is greatly simplified by the elimination of the orthodox rudder-bar when in flight, and the concentration of flying control into one single hanging lever.

Heston is one of the only five organisations which are at present giving instruction on the direct-control Autogiro. The other four are Air Service Training, Ltd., the Bristol and Wessex Aeroplane Club, the Lancashire Aero Club, and the Hanworth Flying School.

FLIGHTS BETWEEN ENGLAND AND AUSTRALIA

The Best Flight Made During Each Year

1919.—Capt. Ross Smith and Lt. K. M. Smith (Vicker's "Vimy"): Hounslow to Darwin .... 28 days

1920.—Lt. Parer and Lt. J. McIntosh (D.H. 9): Hounslow to Darwin ..... 24 days

1926.—Sir Alan Cobham and Sgt. Ward (D.H. 50J): Darwin to Westminster ..... 27 days

1927.—Capt. W. N. Lancaster and Mrs. Keith Miller (Avro "Avian"): Croydon to Darwin ..... 165 days

1928.—Sqd. Ldr. Bert Hinkler (Avro "Avian"): Croydon to Darwin ..... 15½ days

1929.—Sqd. Ldr. C. Kingsford-Smith and C. T. P. Ulm (Fokker F.VII-3m): Sydney to Croydon 12 days 14 hr. 8 min.

1930.—Wing Com. C. Kingsford-Smith (Avro "Avian Sports" 4): Heston to Port Darwin 9 days 21 hr. 40 min.

1931.—J. A. Mollison (D.H. "Moth"): Sydney to Pevensey ..... 8 days 19 hr. 25 min.

1932.—C. W. A. Scott (D.H. "Moth"): Lympne to Darwin ..... 8 days 20 hr. 47 min.

1933.—C. T. P Ulm, G. Allen, and P. Taylor (Avro "Ten"): Harmondsworth to Derby (Australia) 6 days 17 hr. 45 min.

1934.—C. J. Melrose (D. H. "Puss Moth"): Darwin to Croydon ..... 8 days 9 hr.

C. W. A. Scott and T. Campbell Black (D.H. Comet); Mildenhall to Melbourne 2 days 23 hr. 0 min. 18 sec.

THE ROYAL AIR FORCE

Service Notes and News — *Air Ministry Announcements*

OPENING OF R.A.F. STATION, MILDENHALL

The R.A.F. station, Mildenhall, has been placed under the command of the A.O.C., Western Area, within the command of the A.O.C.-in-C., Air Defence of Great Britain. No. 99 (Bomber) Squadron will come under the command of the A.O.C., Western Area, with effect from November 14, 1934.

SIR PHILIP SASSOON'S TOUR

Sir Philip Sassoon was due to arrive at Peshawar on October 18, and from there to carry out inspections of the R.A.F. stations at Kohat and Risalpur. On the 21st he was to start his return journey *via* Quetta to Karachi, where he was to inspect the Aircraft Depôt and civil airport on the 23rd. He was to leave Karachi the next day by Imperial Airways, and is due at Croydon on October 29.

No. 1 (FIGHTER) SQUADRON

Sqd. Ldr C. W. Hill has been appointed to command No. 1 (Fighter) Squadron at Tangmere. The squadron is equipped with "Furies." The new C.O. is an Australian, and during the War he was captured by the Turks, but managed to escape. He also has started on a solo flight to Australia, but crashed on the way. Recently he has been with the Fleet Air Arm.

R.A.F. STAFF COLLEGE

In addition to the names published in the issue of *Flight* of September 20, the following officers have been nominated by their respective Air Boards to attend the R.A.F. Staff College Course, 1935:—Flt. Lt. W. E. Hart, Royal Australian Air Force, and Flt. Lt. F. G. Wait, Royal Canadian Air Force.

No 203 (F.B.) SQUADRON

Reports from India show that the three "Rangoons" of No. 203 (F.B.) Squadron, who have flown from Basra to Australia to attend the celebrations at Melbourne, did not have too easy a passage across India and on to Singapore. They flew overland from Karachi to Chittagong, alighting on the lake at Udaipur and on rivers at Allahabad and Bhagalpur. On arrival at Singapore the officers reported that they had met heavy monsoon weather and poor visibility, and for considerable distances the boats had flown as low as 100 feet. The planes had been pitted by the heavy rain.

PRACTISING MOBILISATION

No. 2 (A.C.) Squadron from Manston, No. 4 (A.C.) Squadron from South Farnborough, No. 13 (A.C.) Squadron from Netheravon, and No. 23 (F.) Squadron from Biggin Hill have been engaged on a test mobilisation. This has consisted in moving the personnel, aircraft, and other equipment of the four squadrons from their home stations to the packing depot at Sealand and then returning to their home stations. The idea is to practise as closely as possible the procedure which would be followed when sending squadrons overseas at short notice. Problems concerning the control of large convoys of mechanical transport and their protection from air attack when on the move are being investigated. Units concerned with the supply of mechanical transport, the provision of special overseas equipment of various kinds, and the arrangement of camps for the squadrons on the line of march were also concerned in this exercise. Special training for a number of reservist drivers, called up for their annual training, was also provided on this occasion. The squadrons came from four different points, and had to converge, and the problems connected with their movements were not too simple. In an emergency such problems would have to be tackled in a hurry and on a much larger scale, and therefore it is very wise to gain experience of how to tackle them in time of peace.

CRUISE OF A "SINGAPORE 3" FLYING BOAT

The "Singapore" flying boat which took Sir Philip Sassoon from Calshot to Cairo in September made a cruise round the Mediterranean after the Under-Secretary for Air had disembarked. Leaving Cairo on October 1, it flew to Alexandretta and Kestelorizo (October 2), Athens (October 3), Brindisi and Naples (October 4), Berre (October 8), and on October 9 completed its cruise with a flight from Berre to Pembroke Dock, where it is attached to No. 210 (F.B.) Squadron. Sqd. Ldr. A. F. Lang, M.B.E., was in command of the flying boat throughout the cruise.

LEE-ON-THE-SOLENT AERODROME

The R.A.F. aerodrome, Lee-on-the-Solent, will be brought into use with effect from October 26, 1934. "A" and "B" Flights of the Base Training Squadron, R.A.F. Base, Gosport, will move to Lee-on-the-Solent, on October 26, 1934. With effect from October 29, 1934, the Flights at Lee-on-the-Solent will be renamed as follows:—

"A" Flight—(Co-operation Flight)—combining "A" Flight (Landplanes) from Gosport, and the Co-operation Flight (Floatplanes) at Lee-on-the-Solent.

"B" Flight (Naval Observers' Training Flight)—renamed from Training Flight, School of Naval Co-operation, Lee-on-the-Solent.

"C" Flight (Telegraphist Air Gunners' Training Flight)—renamed from "B" Flight, Gosport.

NOMAN'S FORT DANGER AREA, SPITHEAD

The area described below is used by Royal Air Force aircraft carrying out high altitude bombing practice, and is to be regarded as a danger area below a height of 15,000 feet above sea level.

"An area within 1,000 yards of Noman's Fort, lat. 50° 44½′ N., long. 1° 05½′ W., from 045° (true) through E. to 180° (true)."

This area is used throughout the year when weather conditions permit, and an arrow is displayed on the roof of the Fort when bombing is in progress.

With reference to Notice to Airmen No. 38 of 1934 attention is drawn to the fact that the officially defined air route between Portsmouth and Ryde, Isle of Wight, passes close to the above area. Particular care should therefore be taken to avoid flying eastward of a line joining Noman's Fort and the Dolphins, 1,500 yards S.S.E. of South Parade Pier, Southsea.

TRANSFER OF OFFICERS TO THE RESERVE

The undermentioned short service and non-permanent officers should note that they become due for transfer to the reserve, or (where indicated) for relinquishment of commission, on completing their period of service on the active list:—

April-May, 1935

General Duties Branch

Flying Officers:—Gerald Vincent Barber, Reginald James William Barnett, Ronald George Edmund Catt, Ronald Neville Clarke, Arthur Edward Dobell, George Francis Keiller Donaldson, Edgar Joseph Ninian Heaven, Douglas Warnes Morrish, Leslie John Maurice White, and Thomas King.

Medical Branch

Flight Lieutenants:—Abraham Henry Barzilay, M.B., Ch.B., and Hugh James Melville, M.B., Ch.B.

Dental Branch

Flight Lieutenant:—James Edward Willoughby.

Chaplains' Branch

The Revd. Hubert Frederick Daniels, April 12. (To relinquish commission; not liable for reserve service.)

Statements from Flt. Lts. Melville and Willoughby, and the Revd. H. F. Daniels, indicating whether or not they desire to be considered for an extension of service to five years on the active list (six years for Mr. Daniels), are to be forwarded forthwith, together with recommendations if the statements are in the affirmative.

SCHOOL OF PHOTOGRAPHY

The undermentioned officer, having successfully completed the specialist photographic course at the School of Photography, South Farnborough, which terminated on September 15, 1934, is granted the symbol "Ph.":—F/O. A. Earle.

RE-OPENING OF No. 2 FLYING TRAINING SCHOOL

No. 2 Flying Training School, Digby, has been placed under the command of the A.O.C., Inland Area, in No. 23 Group, with effect from October 1, 1934.

ROYAL AIR FORCE GAZETTE

London Gazette, October 16, 1934

General Duties Branch

The follg. are granted permanent commissions as Pilot Officers with effect from Sept. 29, and with seny. of the dates stated:—March 29, 1933.—J. H. Becher, F. G. Frow, J. O. Hinks, J. G. Macintyre, W. J. O'Doherty, G. A. Walker. Sept. 29, 1933.—B. Ball, R. G. R. Buckley, B. K. Burnett, R. F. A. Edelsten, J. G. Munro, R. A. E. Traill, T. G. Young.

F/O. J. N. Baxter is granted a permanent commission in this rank (Oct. 11).

The follg. Pilot Officers are promoted to the rank of Flying Officer:—A. H. Allen (Sept. 20, 1933); W. W. E. Oliver (Sept. 21).

Wing Com. R. G. Parry, D.S.O., is placed on the half-pay list, scale A, from Sept. 26 to Oct. 9 inclusive. Flt. Lt. R. H. Donkin is placed on the half-pay list, scale A, from Oct. 3 to 9 inclusive.

The follg. Flying Officers are transferred to the Reserve (Oct. 11):—CLASS A.—I. O. Baldwin, B. W. E. R. Bonsey, V. A. Dawson, F. P. R. Dunworth, N. Foster-Packer, H. M. Gahan, F. B. H. Hayward, N. Hill, M. V. Johnstone, D. E. Milson, E. G. Reed, C. H. Williams. CLASS C.—C. F. G. Adye.

F/O. N. V. Bertram relinquishes his short service commission on account of ill-health (Oct. 11); Lt. A. F. Black, R.N., Flying Officer, R.A.F., relinquishes his temporary commission on retirement from the Royal Navy (Sept. 2).

Accountant Branch

Flt. Lt. J. F. R. Eales-White is placed on the half-pay list, scale A, from Oct. 2 to 8 inclusive.

Medical Branch

Flt. Lt. A. Harvey, M.B., B.Ch., is promoted to the rank of Sqd. Ldr. (Oct. 7).

PRINCESS MARY'S ROYAL AIR FORCE NURSING SERVICE

The follg. Staff Nurses are promoted to the rank of Sister:—Miss M. R. Gall, Miss E. M. Tilbrook (Aug. 1); Miss A. K. Macfie (Sept. 1); Miss P. Garrard (Oct. 5).

ROYAL AIR FORCE RESERVE

Reserve of Air Force Officers

General Duties Branch

F/O. J. H. Leach is transferred from class B to class C. (Sept. 21); F/O. G. D. Fleming is transferred from class A to class C (Oct. 2); F/O. J. A. Ingles relinquishes his commission on appointment to a commission in the Royal Canadian Air Force Reserve of Officers (Oct. 5, 1932).

The follg. relinquish their commissions on appointment to permanent commissions in the Royal Air Force (Sept. 29):—F/O. J. O. Hinks, F/O. J. G. Macintyre, F/O. B. K. Burnett, F/O. F. G. Frow, P/O. B. Ball, P/O. on probation J. G. Munro.

SPECIAL RESERVE

General Duties Branch

P/O. F. F. Rainsford is promoted to the rank of Flying Officer (Sept. 16); P/O. J. H. Becher relinquishes his commission on appointment to a permanent commission in the Royal Air Force (Sept. 29).

AUXILIARY AIR FORCE

General Duties Branch

No. 604 (COUNTY OF MIDDLESEX) (FIGHTER) SQUADRON.—E. N. Prescott is granted a commission as Pilot Officer (Sept. 19).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Air Commodore.—B. E. Sutton, D.S.O., O.B.E., M.C., to Headquarters, R.A.F., India, 4.10.34. For duty as Senior Air Staff Officer vice Air Com. A. S. Barratt, C.M.G., M.C.

Wing Commanders.—N. H. Bottomley, A.F.C., to No. 1 (Indian) Group Headquarters, Peshawar, 4.10.34. To Command vice Air Com. B. E. Sutton, D.S.O., O.B.E., M.C. W. Sowrey, D.F.C., A.F.C., to No. 70 (B.T.) Squadron, Hinaidi, Iraq, 13.9.34. To Command vice Sqd. Ldr. E. J. Cuckney, D.S.C. J. C. P. Wood, to Aircraft Depot, Iraq, Hinaidi. For engineer duties. T. W. F. Thompson, D.F.C., to D. of O., Dept. of Chief of the Air Staff, Air Ministry, 10.10.34.

Squadron Leaders.—H. O. Long, D.S.O., to No. 70 (B.T.) Squadron, Hinaidi, Iraq. For flying duties vice Sqd. Ldr. E. J. Cuckney, D.S.C. W. A. C. Morgan, M.C., to Headquarters, R.A.F., Iraq, Hinaidi. For photographic duties vice Sqd. Ldr. H. V. Pendavis, D.S.O.

Flight Lieutenants.—W. C. Cooper, to No. 84 (B) Squadron, Shaibah, Iraq. N. H. D'Aeth, to No. 8 (B) Squadron, Aden. R. H. Donkin, to No. 55 (B) Squadron, Hinaidi, Iraq. J. A. P. Harrison, to No. 70 (B.T.) Squadron, Hinaidi, Iraq. V. G. A. Hatcher, to No. 8 (B) Squadron, Aden. F. S. Hodder, to No. 203 (F.B.) Squadron, Basrah, Iraq. C. B. Hughes, to Headquarters, R.A.F., India, New Delhi. G. Lacey to Headquarters, R.A.F., Iraq, Hinaidi. H. L. P. Lester, to No. 1 Armoured Car Company, Hinaidi, Iraq. G. P. Macdonald, to No. 84 (B) Squadron, Shaibah, Iraq. J. F. X. McKenna, to Headquarters, Aden Command. A. C. H. Sharp, to No. 23 (F) Squadron, Biggin Hill, 1.10.34.

Flying Officers.—J. Mutch, to Aircraft Depot, Iraq, Hinaidi. M. E. M. Perkins, to Aircraft Park, India, Lahore. R. C. McK. Ferrers, R. E. Weld, and K. J. McIntyre, to R.A.F. Base, Leuchars, 17.9.34. For flying training on appointment to Temporary Commissions. E. C. Ingham, to Air Armament School, Eastchurch, 9.10.34. J. A. Powell, to No. 2 Flying Training School, Digby, 10.10.34.

Pilot Officers.—The following Pilot Officers are posted for Flying Training on 29.9.43, on appointment to Permanent Commissions:—B. Hall, B. K. Burnett, R. F. A. Edelsten, F. G. Frow, J. O. Hinks, J. K. Macintyre, and R. A. E. Traill, to Royal Air Force College, Cranwell. R. G. R. Buckley, J. G. Munro, W. J. O'Doherty, T. G. Young, to No. 3 Flying Training School, Grantham. G. A. Walker, to No. 5 Flying Training School, Sealand. A. C. P. Carver, to No. 8 (B) Squadron, Aden. E. H. P. Clarke, to No. 31 (Army Co-operation) Squadron, Quetta, India. P. H. Dutton, to No. 20 (Army Co-operation) Squadron, Peshawar, India. G. N. Hancock, to No. 55 (B) Squadron, Hinaidi, Iraq. A. H. Jarand, to No. 70 (B.T.) Squadron, Hinaidi, Iraq. D. N. J. P. Leggett, to No. 28 (Army Co-operation) Squadron, Ambala, India. J. A. P. Owen, to No. 84 (B) Squadron, Shaibah, Iraq. R. G. Prier, to No. 84 (B) Squadron, Shaibah, Iraq. C. M. B. Renshaw, to No. 24 (Army Co-operation) Squadron, Peshawar, India. F. Rump, to No. 203 (F.B.) Squadron, Basrah, Iraq. E. T. Smith, to No. 20 (Army Co-operation) Squadron, Peshawar, India. D. H. Spencer, to No. 8 (B) Squadron, Aden. H. R. Tidd, to No. 30 (B) Squadron, Mosul, Iraq. J. E. Townsend, to No. 203 (F.B.) Squadron, Basrah, Iraq. I. H. D. Walker, to No. 70 (B.T.) Squadron, Hinaidi, Iraq. D. E. B. Wheeler, to No. 203 (F.B.) Squadron, Basrah, Iraq. P. N. J. Wilkins, to No. 31 (A.C.) Squadron, Quetta, India. J. C. Evans, to Anti-Aircraft Co-operation Flight, Biggin Hill, 10.10.34.

Acting Pilot Officers.—J. J. J. Page, to No. 1 Armoured Car Company, Hinaidi, Iraq. R. N. J. White, to No. 1 Armoured Car Company, Hinaidi, Iraq. I. S. Williams, to Armoured Car Section, Aden.

Stores Branch

Squadron Leader.—W. A. O. Honey, to Stores and Supplies Depot, Aden, for Stores duties.

Flight Lieutenants.—F. R. Lines, to Headquarters, R.A.F., Iraq, Hinaidi. S. R. L. Poole, to Aircraft Depot, Iraq, Hinaidi.

Flying Officers.—T. A. Head, to No. 84 (B) Squadron, Shaibah, Iraq. E. J. Smith, to No. 8 (B) Squadron, Aden.

Accountant Branch

Squadron Leader.—G. N. Simon, to Aircraft Depot, Iraq, Hinaidi. For Accountant duties.

Flight Lieutenant.—J. F. R. Eales-White, to Headquarters, R.A.F., Iraq, Hinaidi.

Flying Officers.—L. Hornabrook, to Aircraft Depot, India, Karachi. C. F. G. Rogers, to No. 30 (B) Squadron, Mosul, Iraq.

Medical Branch

Group Captain.—A. E. Panter, to R.A.F. General Hospital, Hinaidi, Iraq. For duty as Commanding Officer.

Squadron Leader.—A. Briscoe, to R.A.F. General Hospital, Hinaidi, Iraq. For duty as Medical Officer.

Flight Lieutenants.—J. F. McGovern, to R.A.F. General Hospital, Hinaidi, Iraq. C. G. J. Nicholls, to R.A.F. Hospital, Aden.

Flying Officers.—H. S. Barber, to Aircraft Park, India, Lahore. V. D'A. Blackburn, to No. 28 (Army Co-operation) Squadron, Ambala, India.

COMMERCIAL AVIATION

— AIRLINES — AIRPORTS —

IN LATIN AMERICA

The Work of Panagra, Pan-American Airways and the Smaller Companies in the South American Continent

THE United States were predestined to play the leading part in providing the commercial air services of Latin America. They alone of all the great industrial nations contended for air supremacy in that part of the world, and were able to approach their objective by an overland route. Their experience, too, of flying over great distances in their own country, which meant the saving of actual days in the train instead of hours, gave them a unique advantage. Their political outlook in regard to Latin America, as exemplified by the Monroe Doctrine, and the fascination which big things hold for all Americans, fitted them for this dominant position.

However, the United States were not the first nation to operate regular air services in South and Central America. Even as early as 1921 a German-Colombian company, the Scadta (Sociedad Colombo-Alemana de Transportes Aéreos) inaugurated a highly efficient seaplane service between all the chief towns of Colombia, flying along the coasts and rivers, and in 1928 the French Latécoère Company (subsequently incorporated in Air France) started a weekly postal service between Toulouse and Buenos Aires.

But, once in the field, the Americans were not slow to give a good account of themselves, and they could be relied upon to operate airways on the largest possible scale. In 1929 the Pan-American-Grace Airways, Inc. (Panagra) and the affiliated company, Pan American Airways, Inc., were formed to carry passengers, mails and merchandise between the United States and all the countries of Latin America save the two land-locked republics, Bolivia and Paraguay. In addition to a great number of shorter lines, two main routes were established starting from the U.S.A. and terminating at Buenos Aires. The Pan-American Airways undertook the East Coast route, serving the West Indies, the Guianas, Brazil, Uruguay and Argentina, and to the Panagra were assigned Colombia, Ecuador, Peru and Chile, the same machines crossing the Andes to Argentina and Uruguay.

Owing to the variety of climate and terrain it was necessary to employ different types of machine. In the tropics mangrove swamps and dense virgin forests rendered normal emergency landings impossible, so for this part of the journey amphibians were chosen. Over the deserts of Peru and North Chile, and thence across the Andes and the Argentine Pampas to Buenos Aires, Ford three-engined machines similar to those operating at the time in the U.S. were employed.

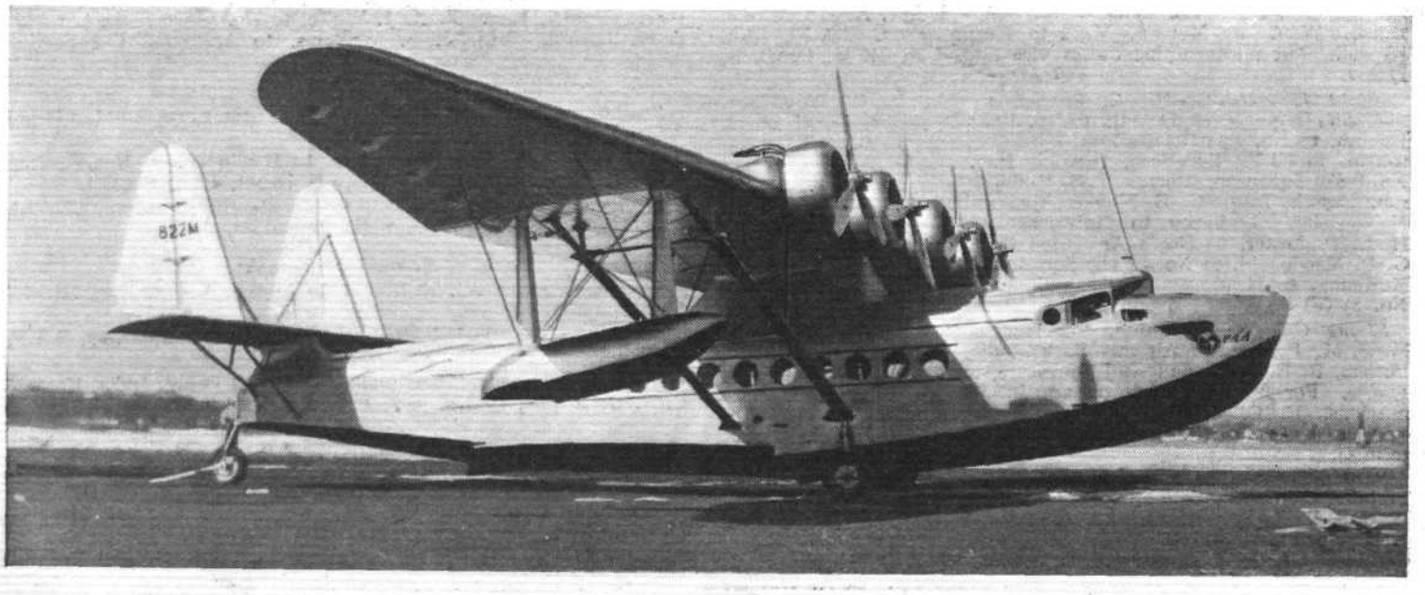
Enormous progress has been made in the five short years since the inauguration of the two companies. Before the end of the present year new and more efficient types will be operating the services. The Fords hitherto used by Panagra, and which have crossed the Andes more than 1,200 times, will be replaced by all-metal twin-motor Douglas D.C.2's, carrying 14 passengers and a large quantity of luggage and mail. They can fly very comfortably and at useful heights with only one engine running.

As the routes of the Pan-American Airways are mostly over water, the new Sikorsky S-42, a four-engined flying boat, has been chosen. This machine carries 32 passengers. Whereas in 1929 the standard cruising speed was only 100 m.p.h., the new Sikorsky does about 160 and the Douglas liner more than 190 m.p.h.

At present three aeroplanes fly every week from the United States to Buenos Aires, two by the West Coast and one by the East Coast route. The time taken is seven days, but with the introduction of the more up-to-date machines this will be reduced to five days by the Eastern and four days by the Western route. The two companies visit thirty-three American countries and colonies and own more than a hundred and fifty commercial machines.

Even Manáos, the Brazilian river port, one thousand miles up the Amazon has a regular weekly service connecting it with the seaport of Pará, the journey taking less than 12 hours.

To-day there is scarcely a town in Latin America of any importance which is not connected with the outside world by



PAN-AMERICAN AIRWAYS' LATEST: The Sikorsky S-42, which is now replacing the older machines on Pan-American Airways' routes, cruises at 160 m.p.h with thirty-two passengers and a crew of four.

air. For, in addition to the Scadta, there are fifteen or so local air companies operating in the different Republics. The most important of these are the Argentine Civil Aviation Line, the Chilean National Air Service, the Lloyd Aero Boliviano, and the Condor Syndicate. Of these all carry passengers and mail, while the last two also transport goods.

Owing to the natural obstacles created by high mountains, deserts and virgin forests, Latin America is relatively poor in means of surface transport, and for this reason aerial development is particularly important. Had the Latin American countries not been so severely affected by the world depression even greater progress would have been achieved.

At present the only foreign rivals of the Pan-American Airways system are Air France, the Deutsche Luft Hansa, and to a much smaller extent, the *Graf Zeppelin*. But Air France and Deutsche Luft Hansa at present only carry mails and operate along a short section of the routes served by the Pan-American Airways. The *Graf Zeppelin* flies only once a fortnight between Europe and Brazil from July to September. No doubt before many years have passed other European nations will compete for South American trade by air as they do to-day by sea. But the supremacy of air traffic between countries of the American Continent is likely to remain with the two United States companies, which have obtained so long a lead and enjoy in this part of the world so many advantages over competitors.

G. A. HINKSON.

CROYDON

On the Way to Mildenhall : To Martlesham in the Douglas : Good Passenger Bookings on the Night Service to Paris

IT would be easier to write Mildenhall notes for last week than Croydon news. Everybody here was either starting for Mildenhall or conspiring to get lifts there in aeroplanes and motor cars. Several competitors put in at Croydon; Col. Fitzmaurice, who had a number of final adjustments made by Rollason Aircraft Co., and F./O. Gilman, whose Fairey "Fox" was in the hands of Surrey Flying Services, Ltd. I understand some intensive day and night work was put in by that company, who are to be congratulated for getting the "Fox" to the starting post in time for the race. Col. Fitzmaurice, by the way, is back at Croydon again now, with the *Irish Swoop*. His many friends will commiserate with him on his bad luck. On Tuesday, October 16, the K.L.M. Douglas with Parmentier and Moll came in with a full load of paying passengers, closely followed by Geysendorffer with the *Panderjager*. Shortly afterwards both machines left for Martlesham Heath for weighing. I was lucky enough to fly to Martlesham and Mildenhall in the Douglas.

The machine is more than usually quiet in the air—infinitely preferable to an express train in that respect. The chairs are really comfortable and seem scientifically designed to meet the requirements of man in a sitting position. By means of a small handle beside the chair you can wind yourself up or down into a variety of restful positions without leaving your seat. The back can also be lowered so that one is almost lying flat. The machine entered the race as a commercial type, and all fourteen chairs were left in place; nothing was altered, and the illuminated panel, "please fasten your safety belts," was in operation. By the way, I wonder why such a notice is considered necessary on American routes, since many European companies do not even fit belts to passenger chairs these days. After flying close on 200 m.p.h. it is very nice to land at 60 m.p.h. on the Douglas. Mildenhall is a very fine field, infinitely superior to Croydon—even the mushrooms there are superior in quality. I am told that the mail carried by the Douglas consisted of 29,500 letters. Many of them were for the Netherland Indies, of course. The K.L.M. people were not at all excited about the Melbourne race. It was an ordinary commercial flight properly organised in advance, and there was nothing hectic or unusual about it.

Mr. Plesman, who flew over on Friday, bringing a large party of Dutch people who went on to Mildenhall, was quietly elated about the nice pay load obtained for the Douglas. There was quite a brisk K.L.M. traffic between Holland and Mildenhall *via* Croydon. In the morning on Friday came an F.VIII, with Mr. Fokker amongst others, which flew to Mildenhall and returned empty. Then, in the afternoon, there was a full F.XVIII, which remained at Mildenhall overnight and conveyed two loads of racegoers back to Croydon. One of these was a gentleman who had fallen into a deep hole at Mildenhall in the dark and injured his leg. He was brought to Croydon and had a car waiting on the tarmac to convey him to a London specialist. The car was ordered by wireless from the air.

Mr. Syd. Jackson, well known as a speedway driver as well as a pilot, left Croydon for Australia on Friday last in his "Avian." His journey had nothing to do with the race, and I wonder he chose so congested a route!

There is a new gadget on the Control Tower railing which resembles an ancient astrolobe in appearance. It is an instrument used in the Navy for direction finding on ultra short wave, and will be tried out here with aeroplanes.

Passenger bookings on most lines are remarkably brisk for the time of year. The Dutch company report full loads on three services a day each way, and the Imperial Airways night service to Paris seldom has a vacant seat. This departure has become quite a popular spectacle, and numbers of visitors are always present. The big silver machine, the floodlit tarmac (making the surrounding night seem darker), the cosily illuminated cabin, and the control tower starting signal lamp directed on to the door of the machine which would otherwise be in shadow, all contribute to make the scene impressive. This departure is at 6.30, and sightseers may also witness the night landing of the K.L.M. Fokker twenty minutes earlier.

A curious incident occurred at Croydon during the week. A young Dutchman arrived by air without a passport. His only excuse was that he wished to see the start of the Australia race. He was detained and placed in detention by the police. Tiring of the Airport police station, he escaped from it and set off across country, pursued by the constabulary. Being much younger than they, he showed them a clean pair of heels. Some days later he was recaptured and, according to the regulations, the company which brought him into the country is compelled to deport him. This may be no hardship for a shipping company, but it is very irritating for an air company, in this case K.L.M., when passenger bookings are so good.

On two Imperial Airways services crossing one another on the Paris route were Laura La Plante and Winston Churchill. Both have come to the conclusion that there is only one rational means of travel, and both of them are very frequently seen at Croydon.

A. VIATOR.

The Air Transport Association

The Baron Wakefield of Hythe has generously made a donation of £105 to the Air Transport Association, and is prepared to consider giving further support in the future. This gesture from "the patron saint of civil aviation" should arouse aircraft operators to the urgent necessity of joining together for the protection of common interests under an independent banner.

The Air Transport Association, which is a section of the S.B.A.C., is likely to do good work in the future, and is divided into airports and operational sections.

America's Accident Record

According to the U.S. Department of Commerce, air passenger lines flew 796,950 miles per accident during the first six months of 1934—there were, in fact, 27 accidents in 21,517,658 miles of flying. In only six of these were passengers or members of the crew fatally injured. During the same period last year there were 48 accidents in some four million more flying miles, an average of 538,794 miles per accident.

Personal errors were blamed for 52 per cent. of these accidents, with engine failure structural failure, and weather more or less evenly given as the causes for 48 per cent.

Commercial Aviation

HESTON

Servicing England-Australia Racers : Two "Gulls" for India : The Autogiro

WESLEY SMITH, pilot to Miss Jacqueline Cochran, brought the Granville monoplane entered for the England-Australia Race to Heston on October 12. A day-and-night race ensued to carry out a number of important modifications, including the rearrangement of the dashboard instruments to permit dual control, and the extension of the exhaust pipe to lead down underneath the fuselage. The former stub exhausts spouted flames which were liable to dazzle the pilot when flying at night. Navigation lights and landing lights were also fitted. The Royal Aero Club allowed an extension until Tuesday of the date of presentation at Mildenhall. Six Heston engineers and three mechanics who came over with the machine from America worked on it continuously, and, as promised, got it through in time. Wesley Smith states that the name on the nose of the machine, "Q.E.D.," means "Quite Easily Done." This has been gracefully accepted as a compliment to Airwork service. Another remark of his is a very true one: "It isn't the race that matters, it is the fact that the special equipment installed by aerodromes on the route will remain for the benefit of future flyers."

The Lockheed "Vega," flown by "Jimmy" Woods, damaged its undercarriage on landing at Heston on its way to Mildenhall, but repairs were put through in time to allow it to qualify. A Heston lorry and two engineers were stationed at Mildenhall to supervise any work which became necessary on these two machines. Miss Cochran herself arrived at Heston on Tuesday and flew on to Mildenhall with Mr. Smith in the Granville.

Two second-hand "Gipsy Major" engined "Gulls" have been fitted with navigation lights and considerably modified by Airwork to bring them up to 1934 standards before shipment to India. They have been purchased by Indian Transcontinental Airways for high-speed passenger and mail carrying.

A visit was paid to Heston on October 14 by the Lord Mayor of Birmingham, Alderman S. Goodby, with the City Engineer and members of the council which is considering the establishment of a municipal aerodrome at Elmdon, on the Birmingham-Coventry road. The party spent a considerable time in the control tower studying the control system which was put into force this year. The hotel and hangars were also inspected.

Since the Autogiro is sometimes criticised on the score of heaviness of control, it is perhaps surprising that the first two pupils on the Heston Autogiro (one of them the Heston Press Secretary) were both women.

Miss Rosalind Norman is probably the only managing director who flies her own aerial delivery van. Her company makes scale models of almost anything with enterprise and accuracy, and although one of their model airliners, weighing over 30 lb., is strong enough to be lifted without damage by the top wing only, they make assurance in transit doubly sure by delivering their own models by air. Miss Norman is a sister of the chairman of Airwork, Ltd., and a graduate of the flying school at Heston. She formed the Model Transport Company in November, 1933, and acquired the technical services of Mr. V. J. G. Woodason. The business began modestly in a small room in Edgware, but orders flowed in, and the company soon moved to its present headquarters in Brooks Mews. Further expansions are now in progress owing to the increase in production.

Germany's Winter Services

The German Deruluft Company is carrying on with the Berlin-Moscow service throughout the winter, and Deutsche Luft Hansa is also continuing its difficult Berlin-Rome service, which will be operated daily.

The Aberdeen-Glasgow Service

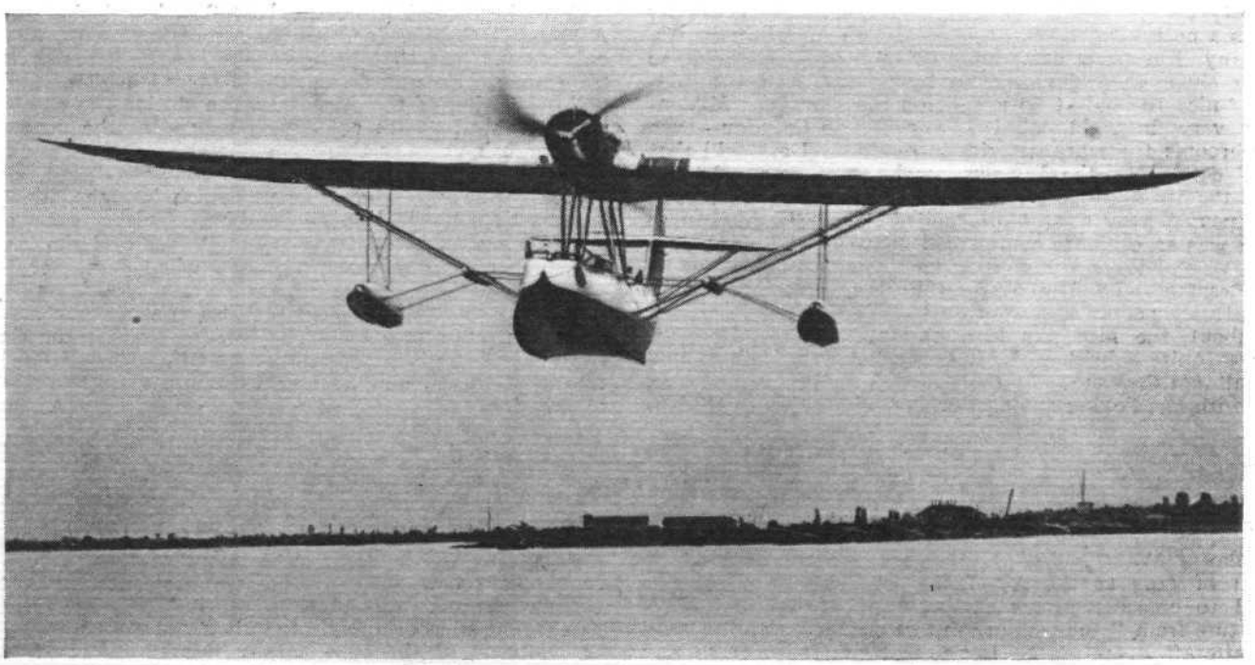
Arrangements have been completed for Aberdeen Airways' winter service between Aberdeen and Glasgow, and this will be operated on Wednesdays and Fridays unless the weather holds it up. An aeroplane will leave Dyce Aerodrome, Aberdeen, at 9.15 a.m., arriving at Renfrew at 10.40 a.m., and will leave again at 2.30 p.m., arriving at Dyce at 3.45 p.m.

Night Flying for Portsmouth

A recommendation by the Docks and Airport Committee that provision be made, at an estimated cost of £5,240, for the equipment of the Portsmoutn Municipal Airport for night flying, has been adopted.

Monospars for Australia

It has been announced that New England Airways, the Australian company which operates an air line between Brisbane and Sydney, has placed an order with General Aircraft, Ltd., for ten Monospar machines. These are to be delivered early in the new year for the extension to Melbourne, and all ten will be equipped with the new "G.A." engine.



A NEW WORLD'S RECORD: Flying the Cant Z501 flying boat (Isotto-Fraschini Asso 750) on Oct. 18-19, the Italian pilot, Mario Stoppani, flew from Trieste to Massana, Eritrea, a distance of 4,122 km. (2,561 miles) in 26 hours 35 minutes, thus establishing a new long-distance non-stop record for seaplanes, subject to homologation.

A LIGHT AMERICAN AMPHIBIAN

The Privateer III P-3B

FROM WET TO DRY: The Privateer amphibian (215 h.p. seven-cylinder Continental R-670 engine) taxying from the water to dry land.

AMPHIBIONS Inc., of Roosevelt Field, Garden City, Long Island, New York, build an interesting little three-seater monoplane amphibian for private owners.

The hull is unique in design and construction, the framework being constructed of chrome molybdenum steel tubing, sand blasted, and covered with bakelite varnish, to which is attached wood stringers and fairing strips. A "Vee"-shaped Alclad bottom 0.65in. thick is bolted to spruce stringers. A process known as "metallising" protects all corrodible metal parts of the aircraft. This process entails sand-blasting all such parts and then spraying molten zinc upon them to a thickness of about ten thousandths of an inch. The covering for the hull consists of 18 oz. duck (of corresponding strength to duralumin) on the sides, and fabric on the top. No metal sheeting is used. All duck is treated with several coats of dope, furnishing a durable moisture-proof finish impervious to water, and which will not leak or crack under the most severe operating conditions.

Comprehensive Equipment

Anchor lines and mooring ropes are carried beneath a deck hatch in the bows. To the rear of this compartment are the battery and tools. Together with these are two compressed-air tanks which operate the retractable landing gear. Aft of the cabin three U.S. Navy type flotation bags, any two of which will keep the machine afloat should the hull be flooded, are carried. These are inflated ready for emergency use. Ample room is provided in the cabin for baggage and wireless.

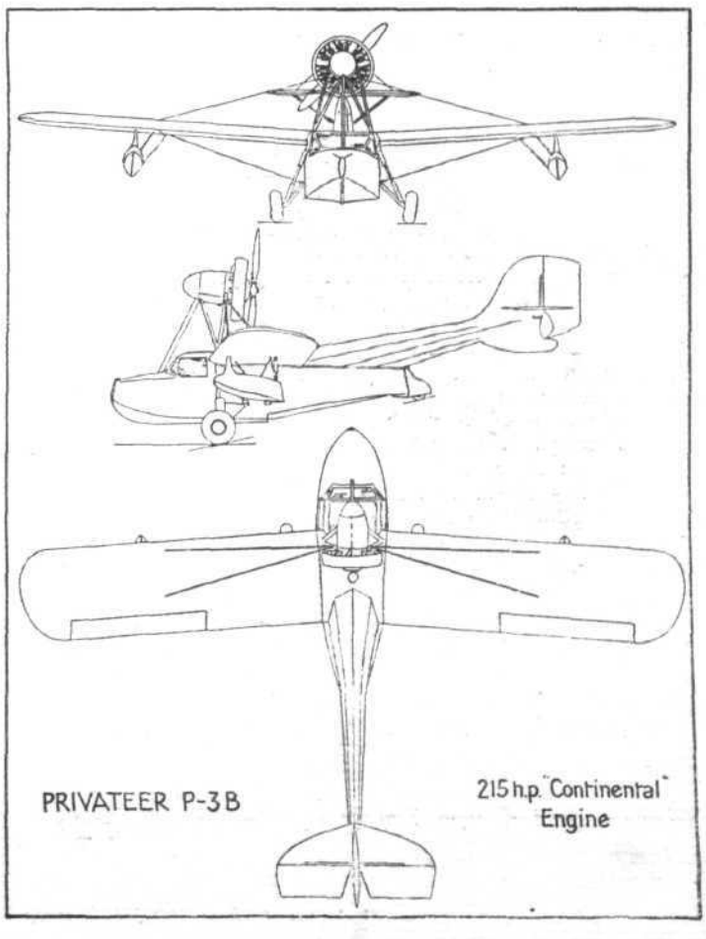
The wings are built of routed spruce spars with stainless steel ribs and drag wires. The ailerons are of stainless steel construction throughout, and are covered with fabric. Two tanks, holding twenty-eight gallons of fuel each, are carried within the wings. Mounted as a pusher above the wings is a Continental R-670 engine of 215 h.p. The front cowling contains the oil tank and the sides are hinged to permit easy access to the engine and starter. Low drag cowling and a Hamilton steel propeller are fitted as standard equipment.

The retraction, lowering and locking operation of the landing gear is effected by moving a small lever similar to the gear lever of a car and requiring no more effort. Mechanically, the automatic operation of the gear is obtained by utilising the stored energy of compressed air derived from a standard Heywood starter which forces air into oil reservoirs. The oil is thereby forced into the retracting chambers and raises or lowers the gear in ten seconds. Bendix brakes are fitted to the wheels, and a pneumatic tail wheel mounted on roller bearings and steered by the rudder pedals is combined with a water rudder.

Visibility, forward, upward and downward, is excellent.

PRIVATEER III P-3B
215 h.p. Continental R-670 engine

DIMENSIONS	
Span	42ft. 6in. (*12,9 m*)
Length	30ft. 4in. (*9,24 m*)
Height	12ft. (*3,6 m*)
Wing area	224 sq. ft. (*20,8 m*)
WEIGHTS AND LOADINGS	
Weight empty	2,233 lb. (*1 014 kg*)
Gross weight	3,200 lb. (*1 453 kg*)
Wing loading	14.3 lb./sq. ft. (*57,8 kg/m²*)
Power loading	15.25 lb./h.p. (*6,9 kg/h.p*)
PERFORMANCE	
Maximum speed	115 m.p.h. (*184 km/h*)
Cruising speed	94 m.p.h. (*154,4 km/h*)
Landing speed	55 m.p.h. (*88 km/h*)
Rate of climb at sea level	600 ft. per min. (*183 m/min*)
Range	400 miles (*640 km*)



CORRESPONDENCE

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

SAMUEL PIERPONT LANGLEY

[2967] Dr. A. F. Zahm, in your issue of October 11, 1934, says: "From the flight of the monoplane model Dr. Langley and other competent judges, including Chanute, Manly and Wilbur Wright, concluded that the quite similar full-scale machine was competent to make a successful pioneer flight, if suitably launched. All of them have recorded this opinion, which has been endorsed by many subsequent engineers."

It is obvious that Dr. Langley held this view, because he had the courage of his opinions and built his full-scale machine, which collapsed in the air when being launched. The fact that the subsequent trials at Hammondsport in 1914, after Dr. Langley's death, necessitated changes in the camber and area of the wings, changes in the wing trussing, different propellers and other fundamental alterations, in order to enable a skilled pilot to make the modified machine hop short straights on the water, proved irrefutably that this opinion was mistaken. Wilbur Wright made so few prophecies that it would be interesting to know where the record may be found of his having shared this mistaken belief with Dr. Langley. Will Dr. Zahm very kindly mention his authority?

GRIFFITH BREWER.

PUBLISH ACCIDENT REPORTS

[2968] Being a regular reader of your most excellent periodical for the last two years, and also possessing a wholehearted enthusiasm for aviation, I would like to support the suggestion made by you in last week's issue in regard to the publishing of accident reports.

Having at last persuaded my parents that aviation is the transport of the future and that it compares favourably with other forms in safety, I am about to send in an application for a short-service commission in the R.A.F. You can imagine the amount of coaxing that had to be done, as it means my giving up my present job, which is certain, but in which I have not the slightest interest, for something which is rather uncertain at the moment in the eyes of parents. However, the recent accidents have almost ruined my slender chances. The common remark being, "They don't even know what caused it," or "You cannot tell what the things are going to do next."

I am sure if the causes were only made public it would restore confidence, and also it would not have the effect of turning parents against their sons taking up aviation as a career.

R. M. FOSTER.

Pontypridd.

AERIAL PHOTOGRAPHIC SURVEY CONTRACTS IN HAND

[2969] The revision of the 1-2,500 ordnance sheets by aerial photography is apparently regarded as a new scheme, whereas Aerofilms, Ltd., have for many years advocated this policy, and have, in fact, photographed for this purpose a number of areas in the past for various municipal authorities.

Aerofilms, Ltd., of Bush House, London, W.C.2, have contracts in hand at the present time for the following municipalities:

The Borough of Wisbech.
The Borough of Finchley.
The Urban District Council of Chingford.
The Chailey Rural District Council.

These authorities are themselves revising the existing ordnance maps, which are many years out of date, from the rectified scaled vertical photographs. It has been found that, providing considerable housing development has taken place since the last revision, air survey effects a saving in cost and time.

Aerofilms, Ltd., has the full approval of the Ordnance Survey for the use of their copyright ordnance sheets as a basis of control for the scaling of the photographs.

Aerofilms, Ltd., London. F. L. WILLS.

THE GRANGER SEMI-TAILLESS AEROPLANE G-ABXL

[2970] It may interest you to hear that the Air Ministry have recently granted permission for the above aircraft to be flown cross country without C. of A.

The "Archæopteryx," you may remember, was produced by my brother and myself in 1930, and in spite of ever-tightening restrictions has been flown to a steadily increasing extent during the last few years. Flying time now is approaching fifty hours, and rapidly increasing with the new liberty of movement.

During the last few week-ends flights have been made (from Tollerton) to Castle Bromwich, Waltham, Sywell, and Hatfield.

With its ten-year-old Mark I "Bristol Cherub" engine, it has a top speed of 95 m.p.h. and cruises at 72-74 m.p.h. (the return flight to Sywell and back averaged 71.5 m.p.h. over 88 miles). At the other end, it can be maintained in a turn with some 45 deg. bank and its nose up at some 5 m.p.h. below its landing speed (40 m.p.h.), and it is practically impossible to stall the controls accidentally (the main plane can be stalled without affecting them).

Now that we can fly it about and demonstrate it, we hope that in spite of its humble amateur origin it may yet be regarded as a serious experiment in practical flying!

R. F. J. GRANGER.

Bramcote, Notts.

Aids to Victory

The record breaking D.H. Comet used by the winners of the England-Australia Race had two D.H. "Gipsy Six" six-cylinder engines equipped with Claudel-Hobson carburetters, Hoffmann ball bearings, B.T.H. magnetos, and K.L.G. plugs, while other parts employed in its construction were supplied by the Weybridge Engineering Co., English Steel Corporation, Sterling Metals, Ltd., and Albion Drop Forgings Co. Equipment of the "Comet" included Smith's Husun compass, Reid and Sigrist turn indicator, Sperry blind flying instruments, Peto and Radford accumulators, Aircraft Components shock absorbers, Dunlop tyres, Bendix brakes, Auto-Klean oil filters, and David Moseley air cushions. Reynolds Tube Co., Ltd., contributed in the construction of the machine, which was doped with Titanine. Finally, Stanavo petrol and Castrol oil were used.

CHANGE OF NAME

WALFORD MARINE & GENERAL INSURANCE COMPANY LTD., 29, Great Saint Helen's, E.C.3. Name changed to Aero Marine & General Insurance Company Limited, on October 12, 1934.

PUBLICATIONS RECEIVED

Brochure. *Type C30 Autogiro.* London: Cierva Autogiro Co., Ltd., Bush House, W.C.2.

Wings. My 25 Years of Flying. By Capt. H. C. Biard. Price 9/6 net. London: Hurst and Blackett Ltd.

Aeronautical Research Committee Reports and Memoranda. No. 1601. Accuracy of Performance Measurement. By J. L. Hutchinson and E. Finn. February, 1934. Price 6d. net.

Aeronautical Research Committee Reports and Memoranda. No. 1605. Abstract. Flow Due to a Rotating Disc. By W. G. Cochran. June, 1934. Price 2d. net.

Aeronautical Research Committee Reports and Memoranda. No. 1606. Abstract. Stresses Induced by Flexure in a Deep Rectangular Beam. By D. B Smith and R. V. Southwell. June, 1934. Price 2d. net.

Aeronautical Research Committee Reports and Memoranda. No. 1607. Abstract. A modification of Oseen's Approximate Equation for the Motion in Two Dimensions of a Viscous Incompressible Fluid. By R. V. Southwell and H. B. Squire. June, 1934. Price 2d. net.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = Cylinder: i.c. = internal combustion: m. = motors. (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1933

Published October 25th, 1934.

6175. WELMAN, F. S., and LEVELL, A. Aeroplane wing structures. (417,178).
10576. ARCHBALD, R. H. Heat-insulated apparatus for testing instruments such as those used on aircraft, at different and more particularly low temperatures. (416,991).
13224. ARMSTRONG WHITWORTH AIRCRAFT, LTD., Sir W. G., WYLIE, H. N., and GOULD, G. H. Metal airscrew. (417,139).
32218. FAIREY AVIATION CO., LTD., and WILLIAMS, D. L. H. Means for controlling aircraft. (417,161).
33051. FAIREY AVIATION CO., LTD., and FORSYTH, A. G. Propellers for aircraft and for like purposes. (417,163).
33936. LOUTZKOY, B. VON. Pneumatic tyres for aircraft, vehicles and ordnance of all kinds. (417,088).

APPLIED FOR IN 1934

1945. RIGBY, E. G., and RIGBY, P. N. R. Aircraft. (417,093).
9783. MATHER, C. Construction of air propellers and blades therefor. (417,232)